Did imports of sweetened beverages to Pacific Island countries increase between 2000 and 2015?

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Abstract  

Background: Nutrition-related chronic diseases are the major cause of illness and death in Pacific Island countries. Imports of sweetened beverages (SBs) are likely to be contributing but there is limited analysis of the quantities imported or the source countries of such beverages. The purpose of this study was to describe trends in the amount and types of SBs imported to Pacific Island countries and the impact of SB taxes on imports in Fiji and Tonga.

Methods: A repository of official international trade statistics was used to collect data on the volume, dollar value and source countries of SBs exported to Pacific Island countries from 2000 to 2015. Corresponding population data was sourced from the Secretariat of the Pacific Community for per capita analyses. We also explored which countries earned the most from exporting SBs to the Pacific. Descriptive and regression analyses were used to describe trends over time for each country and for the region as a whole.

Results: Imports of SBs to Pacific Island Countries from 2000 to 2015 increased by an average of 0.30 kg per person per year (p < 0.001). New Zealand and the USA were the largest income earners from SB exports to the Pacific over this period. The introduction of a tax did not impact the volume of SBs imported to Fiji. More data is needed to assess the impact of SBs tax on imports in Tonga.

Conclusions: Exports of SBs to Pacific Island countries are increasing. Both importing and exporting countries should consider the health implications of trade in these products.

Keywords: Imports, Pacific Island countries, Sugar sweetened beverage, Taxes, Trade, UN Comtrade, Fiji, Tonga

Background

In recent years, Pacific Island countries have experienced a rise in non-communicable diseases (NCDs). The region has some of the highest prevalence rates of type 2 diabetes (47%) and obesity (75%) in the world [1]. Moreover, 60 to 77% of total deaths in Pacific Island countries are attributable to NCDs [1].

Globalisation, specifically the global trade of foods, may contribute to NCDs [2]. While trade has improved food security in developing countries, importation of processed foods and beverages that are nutrient-poor and/or energy dense such as soft drinks and instant noodles can contribute to unhealthy diets. This is particularly evident in Pacific Island countries where domestically produced foods low in fat and high in complex carbohydrate, dietary fibre, and foods of plant origin [3], have been largely replaced with imported, processed foods [4]. In Palau, for example 84% of food supplies are imported [5]. This has led to a nutrition transition marked by increased availability of imported foods such as...
rice and bread and decreased consumption of local food such as taro and yam [1]. Seafoods have been replaced by imported meats high in fat and fruit and starches have been replaced by sugar and confectioneries [1, 6]. Such dependence on imported foods, associated declines in domestic production, economic shocks and climate change are posing new threats to food security in the Pacific and contributing to NCDs [7].

Sugar sweetened beverages are defined as beverages that contain added sugars, or are a significant source of free sugars, such as soft drinks, energy drinks, juices and milk drinks. A study conducted in 2011 revealed high soft drink consumption, with 311 (L) being consumed per person in Tonga in 2011 and 84 L being consumed per person in Palau that same year [8]. In Tokelau, increased sugar availability has been associated with dental caries in children [9]. Between 1963 and 1999, sugar imports increased eight times and mean number of decayed and filled teeth increased from 3 to 5 [9].

Despite high rates of NCDs in the Pacific and our knowledge of the contribution of foods/beverages high in fat, sugar, and salt to NCDs, including caries, little research has been done to investigate volumes of unhealthy products imported to Pacific countries. International Trade Databases document the flow of goods, including foods, between countries and tapping into this information may help policy makers identify import trends detrimental to health.

The aim of this paper was to track imports of SBs to Pacific Island countries over time and identify source countries and related earnings. We also investigated the extent to which SBs imports decreased in Fiji and Tonga following the introduction of taxes in those countries.

Methods
Study design
We conducted a secondary analysis of publicly available food commodities data to describe changes in imports of sweetened beverages to Pacific Island countries between 2000 and 2015.

Data sources
The United Nations Commodity Trade Statistics Database (UN Comtrade) was used to collect information on the types and volume (or weight) of SBs imported to Pacific Island countries, dollar value (in US dollars) and source countries from 2000 to 2015. The UN Comtrade has imports and exports information reported by statistical authorities from approximately two hundred countries or areas. It contains trade data from 1962 to the most recent year [10].

Pacific Island countries’ population data from year 2000 to 2015 was sourced from the Statistics for Development Division (SDD) of the Secretariat for the Pacific Community (SPC) and summed to give an estimate of the total population across all countries (Table 4 in Appendix 1) [11]. Where data was missing for a country in a particular year, the missing data was inferred using linear regression analysis of all available data points (between 2000 and 2015).

Countries
We focused on 12 countries that are members of the Pacific Island Forum Secretariat (PIFS), hereafter referred to as Pacific Island countries (PICs). These included Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, New Caledonia, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. Republic of Marshall Islands, Nauru, and Niue are also members of PIFS but import data were not available. Fiji and Tonga introduced SB taxes during the study period (Table 1). Average GDP for the 12 included Pacific Island countries increased from USD 3.4 billion in 2000 to USD 8.9 billion in 2015 [12]. In 2015, GDP in Fiji was USD 4.6 billion and Tonga was USD 0.4 billion [12].

Sweetened beverages
We used the World Health Organization (WHO) nutrient profile model for the Western Pacific region to define SBs for this study [14]. This model was designed to assist countries in making decisions about appropriate marketing of food and beverages to children. It provides nutrient cut-points for sugar, salt, and saturated fat in 18 food categories above which it is not recommended that foods be advertised to children. The model uses the Harmonized Commodity Description and Coding System (HS code), an international standardised system of names and numbers for the classification of commodities, which is used by UN Comtrade. We defined SBs as HS Codes 20.09 (juices), 04.02 (milk drinks), 21.01.12 (tea and coffee), 22.02 (water, including mineral and aerated drinks) (Table 2; Table 5 in Appendix 2).

Data analysis
We conducted a linear regression analysis to describe trends in SB imports in kilograms per person per year for all 12 Pacific Island countries from 2000 to 2015. Upon visual inspection of the data, it was evident that an unusually large amount of SSBs were imported to Pacific Island Countries in 2010. After exploring stockpiling, slumps in domestic production, an increase in tourism, cyclones, and other potential explanations with colleagues in the Pacific we could not find evidence to explain the 2010 observation, and so we treated this as an outlier and removed 2010 values from the primary analysis. Sensitivity analyses including data for 2010 were not appreciably different to the primary analyses (Table 6 in Appendix 3). Descriptive analyses were
conducted to determine which countries were the top exporters of SB to Pacific Island countries based on earnings (US dollars). We used world consumer price inflation data (annual % from 2000 to 2015) from the World Bank to adjust earnings for inflation (base year = 2015). Descriptive analysis was also used to determine trends over time in types of SBs (juices, milk drinks, tea and coffee, other) imported. To see if imports decreased following the introduction of taxes, we also conducted linear regression analyses to describe trends in SBs imports in kilograms per person per year for Fiji and Tonga.

**Ethics**

We applied for and were granted an exemption for ethics approval by the Deakin University Human Research Ethics Committee (2017–205).

**Results**

**Change in SB imports over time**

Imports of SBs to PICS increased from 24 million kg in 2000, to 39 million kg in 2015 (Fig. 1). Our regression analysis revealed a statistically significant increase of 0.30 kg/person per year (95% CI: 0.15, 0.45) of SBs to PICs – or 4.5 kg/person (95% CI: 2.25, 6.75) over the 15-year period.

**Trends in imports of SBs by sub-category**

‘Water, including mineral and aerated drinks’ were imported in the highest volumes compared to other sub-categories (Fig. 2). Between 2000 and 2015, we observed significant increases in imports per person per year of ‘juices’ (HS Code: 20.09), which increased by 0.18 kg/person per year (95% CI: 0.12 to 0.23), ‘tea and coffee preparations’ (HS Code: 21.01.12), which increased by 0.01 kg/person per year (95% CI: 0.00, 0.01), and ‘water, including mineral and aerated drinks’ (HS Code: 22.02) which increased by 0.15 kg/person per year (95% CI: 0.05, 0.25). Imports of ‘milk drinks’ (HS Code: 04.02) per person per year did not significantly change over the period 2000 to 2015 (−0.03 kg/person per year (95% CI: −0.1, 0.03).

**Top exporter earners from SBs**

The inflation adjusted total trade value of exports of SBs to the Pacific Islands was 1.1 billion in 2015 dollars, with New Zealand, USA and France being the top earning countries over this 15-year period (Table 3).

| COUNTRY | YEAR OF ADOPTION | IMPORT TARIFF RATE | EXCISE TAX RATE | SBs TAXED |
|---------|-----------------|-------------------|----------------|-----------|
| Fiji    | 2011            | No specific tariff\(^a\) 32% import duty applied to beverages whether or not they are sweetened | No specific tax 15% excise tax applied to beverages whether or not they are sweetened, excludes sweetened milk (HS22.02) | Soft drinks and juice, whether or not sweetened, includes sweetened milk (HS22.02) |
| Tonga   | 2013            | No specific tariff Average import tariff of 10% on food and beverages | T 0.50 /L, replacing an existing 15% import duty | Sweetened beverages, including flavoured milk (HS22.02) |

\(^a\) No specific tax means that the rate of taxation for SBs was no greater than that of other categories of food or drink [13]

\(^b\) Tonga doubled the excise tax on SBs in 2016 to T$1/L (USD 0.43) and there was a further increase to T$1.50/L (USD 0.65) in 2017 and changes to broaden the tax to include fruit juices and powdered drinks.

**Table 2** Sweetened beverage HS codes and description of the beverages they contain from the WHO Nutrient Profile Model

| HS Codes* | Description of beverages |
|-----------|--------------------------|
| 20.09     | Fruit juices (including grape must)\(^b\) and vegetable juices, unfermented and not containing added spirit, whether or not containing added sugar or other sweetening matter |
| 04.02     | Milk and cream, concentrated or containing added sugar or other sweetening matter |
| 21.01.12  | Preparations with a basis of extracts, essences, or concentrates with a basis of coffee |
| 22.02     | Waters, including mineral and aerated, containing added sugar or other sweetening matter or flavoured. Soft drinks are included in this category. |

*HS Codes is an international standardised system of names and numbers for the classification of commodities

\(^b\) Grape ‘must’ is freshly crushed fruit juice (usually grape) that contains the skins, seeds, and stems of the fruit.
0.32). We did not observe an obvious downward trend post the introduction of the 2011 SB tax when visually inspecting the trend. We observed a statistically significant increase in SB imports to Tonga between 2000 and 2014, which increased by 1.50 kg/person per year (95% CI: 0.87, 2.14). It was not possible to draw conclusions on the effect of taxation in Tonga, given there was only one data point (2014) following the introduction of the tax.

**Discussion**

The quantity of SBs imported to PICs increased significantly from 2000 to 2015 with exporting countries, particularly New Zealand, the USA and France, making a total of USD 1.1 billion from sales. ‘Water, including mineral and aerated drinks’ were the most common type of SBs imported, and imports of juices, milk drinks and ‘water, including mineral and aerated drinks’ all increased significantly between 2000 and 2015.

Liberalisation of trade barriers may be one explanation for the observed increase in SBs imports. A longitudinal analysis of 44 low- and middle-income countries describes trade liberalisation as a vector for sugar after observing lower tariffs translate into increased imports and increased sales over the 13 years from 2001 to 2014 [15]. Similarly, a study comparing sugar-sweetened carbonated beverage sales in Vietnam and the Philippines found growth in sales in Vietnam, led by foreign-owned companies, significantly accelerated after trade and investment liberalization [16]. Finally, a study in 11 PICs between 2003 and 2013 reported trade liberalisation had a positive and statistically significant effect on imports of processed foods to Pacific Island countries [17]. Our results are consistent with the study’s findings over the same period of time. In addition to detrimental impact
of diets high in processed foods on nutrition and health [18], a reliance on imports also has the potential to undermine domestic production and local food systems and loss of traditional knowledge and biodiversity [19].

Another explanation may be an increase in advertising for SBs. A study investigating the effects of unhealthy food advertising on children and adolescents in Suva, Fiji demonstrated an impact on food preferences and requests [20]. A further potential explanation is an association with development assistance. High levels of development assistance have been associated with high levels of food imports from the same countries. A survey of the availability of imported foods in Pacific Island countries found that 56% of food items in Nauru’s stores were manufactured in Australia, a country that Nauru is heavily reliant on for aid [9]. Our data provides preliminary support for this contention given that New Zealand, Australia, France and the USA provide substantial development aid to Pacific Island countries, although more detailed analysis would be required to investigate it in a rigorous way.

This study addresses, in part, a lack of research evaluating the effectiveness of SB taxes in the Pacific Island region [21]. An assessment of the tax in Fiji revealed the cost of SBs increased in response to the tax [9]. It may be that the increase was not sufficient to impact imports, that a clear picture is being complicated by sizable domestic production of SBs in Fiji, or that our measure is too blunt to capture the impact of the tax on imports. In line with the decrease we observed in the imports of SBs to Tonga between 2013 (when the tax was introduced) and 2014, using a time series analysis, Teng et al. reported that successive tax increases from 2013 in Tonga were associated with increased prices, decreased taxed beverage imports, and increased locally bottled water [22].

**Strengths and limitations**

Strengths include the secondary analysis of publicly available commodities data for answering health related questions. We were also able to take advantage of natural experiments and track the impact of new SB taxes in Fiji and Tonga on levels of imported SBs. The UN Comtrade database has the sole purpose of providing trade data. However, it is not detailed enough to differentiate between particular types of SBs. For example, we were unable to exclude artificially sweetened beverages or bottled water from HS code 22.02. The proportion of water-based beverage imports to the Pacific that are artificially sweetened is not known but for comparison, it is estimated that non-sugar sweetened beverages comprised 36% of water-based beverage sales in Australia in 1997 and 59% in 2018 [23]. Also, it is continuously updated which means it may yield different data with

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**Table 3** Value of SB exports to Pacific Island Countries, 2000–2015 in 2015 dollars

| Export Country | Trade Value (USD)* | Share (%) |
|----------------|--------------------|-----------|
| New Zealand    | 197,514,296        | 18.4      |
| USA            | 153,067,437        | 14.2      |
| France         | 137,238,196        | 12.8      |
| Australia      | 63,819,822         | 5.9       |
| Fiji           | 22,192,803         | 2.1       |
| Other countries| 501,154,671        | 46.6      |
| **Total**      | 1,074,987,225      | 100       |

* Adjusted for annual world consumer price inflation
successive data extractions. It should be noted that taxes in Fiji and Tonga apply to both sugar-sweetened and non-sugar sweetened beverages. Another limitation is the lack of information on domestic production which meant we were not able to fully quantify availability of SBs in some countries. Tonga has limited domestic production of SBs but Fiji has a Coca Cola Amatil factory that not only produces SBs for Fiji but also a number of other Pacific countries (see Table 3) [17]. A further limitation is that our population level analyses were not able to account for tourists who visit Pacific countries in large numbers and consume at least some of the imported SBs.

### Table 4 Population data for all Pacific Island Countries of Interest

| Year | Fiji | Tonga | Tuvalu | Vanuatu | Samoa | Solomon Islands | Cook Islands |
|------|------|-------|--------|---------|-------|-----------------|--------------|
| 2000 | 798,751 | 99,162 | 9,540 | 189,542 | 175,066 | 416,018 | 15,743 |
| 2001 | 804,572 | 99,755 | 9,576 | 194,605 | 176,710 | 427,904 | 15,030 |
| 2002 | 810,335 | 100,238 | 9,621 | 199,750 | 177,751 | 439,987 | 15,113 |
| 2003 | 816,029 | 100,741 | 9,682 | 204,985 | 178,683 | 452,555 | 15,193 |
| 2004 | 821,637 | 101,265 | 9,980 | 210,319 | 179,501 | 465,494 | 15,270 |
| 2005 | 827,125 | 101,482 | 10,285 | 215,769 | 180,203 | 478,792 | 15,345 |
| 2006 | 832,449 | 101,991 | 10,432 | 221,344 | 180,741 | 492,438 | 15,324 |
| 2007 | 837,271 | 102,248 | 11,130 | 227,056 | 181,267 | 506,422 | 15,369 |
| 2008 | 840,032 | 102,652 | 11,035 | 232,908 | 181,964 | 520,617 | 15,426 |
| 2009 | 843,888 | 103,023 | 11,093 | 234,023 | 182,578 | 515,870 | 15,479 |
| 2010c | 847,793 | 103,365 | 11,149 | 245,376 | 183,123 | 539,469 | 15,529 |
| 2011 | 851,744 | 103,036 | 11,206 | 251,784 | 187,820 | 553,254 | 15,694 |
| 2012 | 856,571 | 103,192 | 11,183 | 255,678 | 187,812 | 562,307 | 15,649 |
| 2013 | 859,200 | 103,300 | 10,900 | 264,700 | 192,203 | 615,804 | 16,049 |
| 2014 | 865,602 | 103,131 | 11,449 | 266,905 | 189,991 | 586,379 | 16,134 |
| 2015 | 867,000 | 103,300 | 10,900 | 277,600 | 192,203 | 615,804 | 16,219 |
| 2016a | 100,651 | 11,534 | 272,459 | 195,979 | 651,700 | 17,459 |

| Year | Federated States of Micronesia | French Polynesia | Kiribati | New Caledonia | Palau | Total Populationb |
|------|-------------------------------|-----------------|---------|---------------|-------|-------------------|
| 2000 | 107,021 | 259,530 | 84,230 | 208,708 | 19,129 | 2,382,440 |
| 2001 | 106,840 | 260,190 | 85,872 | 212,825 | 19,293 | 2,413,072 |
| 2002 | 106,612 | 260,850 | 87,396 | 216,941 | 19,454 | 2,443,988 |
| 2003 | 106,339 | 261,510 | 88,756 | 221,058 | 19,610 | 2,475,141 |
| 2004 | 106,021 | 262,170 | 90,272 | 225,174 | 19,761 | 2,506,864 |
| 2005 | 105,654 | 262,830 | 92,533 | 229,291 | 19,907 | 2,539,216 |
| 2006 | 105,232 | 263,490 | 93,698 | 233,407 | 19,907 | 2,570,593 |
| 2007 | 104,754 | 264,150 | 95,470 | 237,524 | 19,907 | 2,602,823 |
| 2008 | 104,217 | 264,810 | 97,201 | 241,640 | 19,907 | 2,632,780 |
| 2009 | 103,620 | 265,470 | 98,989 | 245,757 | 19,907 | 2,640,187 |
| 2010a | 102,843 | 266,130 | 103,058 | 249,873 | 20,518 | 2,688,226 |
| 2011 | 103,928 | 266,790 | 103,975 | 253,990 | 20,643 | 2,723,144 |
| 2012 | 103,395 | 267,450 | 105,865 | 258,106 | 17,501 | 2,745,294 |
| 2013 | 103,395 | 269,100 | 108,000 | 262,223 | 17,800 | 2,823,474 |
| 2014 | 103,140 | 270,500 | 109,645 | 268,767 | 17,588 | 2,809,232 |
| 2015 | 102,300 | 263,000 | 110,136 | 265,600 | 17,661 | 2,737,286 |
| 2016a | 104,600 | 273,800 | 115,300 | 277,000 | 17,800 | 2,912,915 |

aData for the year 2016 was in linear trend analyses to make inferences about missing population data. Cells in which the population data for a specific year was inferred are presented in italics.

b Total population data represents the sum of all 12 countries.

c Data for the year 2010 was excluded from the primary analysis.
Appendix 2

Table 5: SSB import data for PICs from 2000 to 2015

| Year | TOTAL NETWEIGHT JUICES (20.09) | TOTAL NETWEIGHT MILK DRINKS (04.02) | TOTAL NETWEIGHT TEA AND COFFEE (21.01.12) | TOTAL NETWEIGHT WATER, INCLUDING MINERAL AND AERATED DRINKS (22.02) | TOTAL NETWEIGHT OF SB IMPORTS (KG) | NETWEIGHT OF SB IMPORTS TO FIJI (KG) | NETWEIGHT OF SB IMPORTS TO TONGA (KG) |
|------|--------------------------------|-------------------------------------|------------------------------------------|-------------------------------------------------|----------------------------------|-------------------------------|----------------------------------|
| 2000 | 4,672,566                      | 6,629,494                           | 1290                                     | 12,630,011                                      | 24,025,113                      | 5,364,492                      | 2,884,047                       |
| 2001 | 4,884,104                      | 10,932,450                          | 7200                                     | 15,716,764                                      | 31,688,888                     | 8,842,313                     | 2,700,199                       |
| 2002 | 4,781,340                      | 8,954,690                           | 132,949                                  | 13,506,675                                      | 27,535,113                     | 6,649,207                     | 2,568,555                       |
| 2003 | 5,838,002                      | 10,569,714                          | 54,201                                   | 13,888,543                                      | 30,560,474                     | 8,375,517                     | 2,291,880                       |
| 2004 | 6,311,478                      | 8,757,039                           | 69,087                                   | 16,817,855                                      | 32,182,719                     | 7,733,936                     | 4,164,337                       |
| 2005 | 7,637,703                      | 10,362,393                          | 124,066                                  | 15,877,264                                      | 34,344,225                     | 10,290,525                    | 2,796,673                       |
| 2006 | 8,017,202                      | 11,195,688                          | 119,732                                  | 17,632,453                                      | 37,236,289                     | 11,137,006                    | 3,497,240                       |
| 2007 | 8,795,573                      | 10,131,184                          | 109,732                                  | 21,786,451                                      | 41,169,794                     | 8,977,592                     | 4,211,572                       |
| 2008 | 9,543,735                      | 7,653,258                           | 109,732                                  | 19,827,138                                      | 37,499,351                     | 8,247,607                     | 3,961,497                       |
| 2009 | 9,322,623                      | 8,436,547                           | 124,066                                  | 21,348,118                                      | 41,169,794                     | 8,247,607                     | 3,961,497                       |
| 2010 | 7,637,703                      | 10,290,525                          | 119,732                                  | 17,669,660                                      | 30,560,474                     | 8,375,517                     | 2,568,555                       |
| 2011 | 9,287,323                      | 9,959,137                           | 122,418                                  | 17,669,660                                      | 36,643,182                     | 9,144,018                     | 4,297,561                       |
| 2012 | 14,848,826                     | 8,135,919                           | 275,940                                  | 22,752,183                                      | 46,367,487                     | 10,481,273                    | 5,168,096                       |
| 2013 | 13,746,041                     | 11,726,753                          | 261,336                                  | 21,310,072                                      | 47,573,716                     | 10,599,359                    | 4,573,153                       |
| 2014 | 10,484,041                     | 8,508,732                           | 256,743                                  | 19,323,864                                      | 38,966,734                     | 8,154,759                     | NA                              |

* Data for the year 2010 was excluded from the primary analysis

Appendix 3

Table 6: Comparison of output for primary and sensitivity analyses

|                         | Primary Analyses (excluding data for the year 2010) | Sensitivity Analyses (including data for the year 2010) |
|-------------------------|-----------------------------------------------------|-------------------------------------------------------|
| TOTAL SSB IMPORTS PER CAPITA | Increase per person per year 0.30 (0.15, 0.45)       | 0.38 (0.05, 0.70)                                      |
|                         | Increase per person over 15 years 4.50 (2.25, 6.75) | 5.70 (0.75, 10.50)                                     |
| IMPORTS OF JUICES (20.09) PER CAPITA | Increase per person per year 0.18 (0.12, 0.23)       | 0.24 (0.00, 0.47)                                      |
|                         | Increase per person over 15 years 0.45 (0.80, 1.35) | 3.60 (0.00, 7.05)                                     |
| IMPORTS OF MILK DRINKS (04.02) PER CAPITA | Increase per person per year 0.01 (0.00, 0.01)       | 0.01 (0.00, 0.01)                                      |
|                         | Increase per person over 15 years 0.15 (0.00, 0.15) | 0.15 (0.00, 0.15)                                     |
| IMPORTS OF TEA AND COFFEE (21.01.12) PER CAPITA | Increase per person per year 0.15 (0.05, 0.25)       | 0.16 (0.04, 0.28)                                      |
|                         | Increase per person over 15 years 2.25 (0.75, 3.75) | 2.40 (0.60, 4.20)                                     |
| Total IMPORTS OF SSBS TO FIJI PER CAPITA | Increase per person per year 0.11 (0.09, 0.32)       | 0.29 (0.04, 0.28)                                      |
|                         | Increase per person over 15 years 1.65 (1.35, 1.85) | 4.35 (1.65, 1.85)                                     |
| Total IMPORTS OF SSBS TO TONGA PER CAPITA | Increase per person per year 1.50 (0.87, 2.14)       | 1.52 (0.93, 2.12)                                      |
|                         | Increase per person over 14 years 21.00 (12.18, 29.96) | 21.28 (13.02, 29.68)                                  |
Conclusions
These results may help policy makers in the Pacific Island countries assess whether controls are needed on SB imports. Also, the results draw attention to the fact that tax payers in New Zealand and Australia are paying for the increasing costs of NCDs in the PICs (through aid funding provided to these countries) on the one hand while, on the other, companies based in New Zealand and Australia are profiting from exporting SBs to the same countries. For example, Tonga received AUD32.9 million (~ USD 23.5 million) in aid from Australia in 2011–2012 [24]. In spite of the noted limitations of the UN Comtrade Database, its ability to shed light on imports of SBs to Pacific Island countries may have value for determining availability of other foods or food-groups contributing to NCDs.

Declarations
Ethics approval and consent to participate
We applied for and were granted an exemption for ethics approval by the Deakin University Human Research Ethics Committee (2017–205).

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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