

# 2 Special feature: Consumption tax revenues under COVID-19: lessons from the 2008 global financial crisis

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Chapter 2 analyses the drivers of changes in consumption tax revenues during economic downturns, with the global financial crisis (2007-09) as a case study, and uses these insights to understand how the COVID-19 crisis will affect tax revenues.

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## Introduction

The fight against COVID-19 has forced many countries to impose unprecedented measures, shutting down large parts of the economy and isolating a significant proportion of the population. As a result, public life has been severely impeded or halted and consumer spending has plummeted, with wide-ranging implications for tax revenues. (Simon and Harding, 2020<sup>[1]</sup>) analyses the impacts of major economic downturns on consumption tax revenues, particularly during the global financial crisis (GFC) of 2007-09, providing important insights on how the COVID-19 crisis is likely to affect consumption tax revenues.

During the GFC, tax revenues in OECD countries fell considerably, with most countries experiencing the lowest point in their tax revenues as a share of GDP for several decades. Meanwhile, revenues from taxes on consumption were typically less affected and have been seen to be more stable over time than revenues from other bases such as corporate income (Simon and Harding, 2020<sup>[1]</sup>).

As countries navigate the COVID-19 crisis, government spending programmes and tax policy measures, including consumption tax measures, are playing an important role in supporting individuals and businesses. With all OECD countries strongly relying on consumption taxes, which represent on average

around one-third (32.7%) of total tax revenues and 10.9% of GDP, monitoring and understanding what drives changes in revenues from consumption taxes is key. This is particularly the case in light of the COVID-19 crisis relief packages and their implications for fiscal policy and public debt levels in many countries.

This Special Feature is based on the analysis in (Simon and Harding, 2020<sub>[1]</sub>)<sup>1</sup>, which examines the drivers of recent changes in consumption tax revenues in OECD countries by disentangling their policy and macroeconomic drivers. This Special Feature identifies the channels through which consumption tax revenues are affected during an economic downturn, using the GFC as a case study to draw initial insights into how the COVID-19 crisis and the policy actions taken in response to it will affect tax revenues.

## Trends in consumption tax revenues

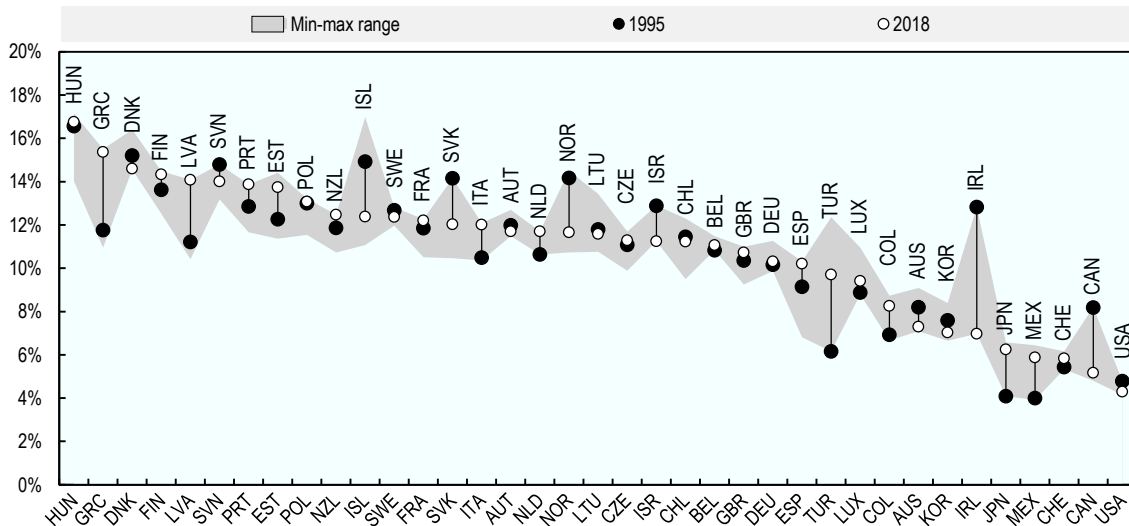
As detailed in chapter 1, taxes on consumption<sup>2</sup> are an important source of tax revenue in all OECD countries. In 2018, they ranged from less than 6% of GDP in the United States, Canada and Mexico to more than 15% in Greece and Hungary.

The overall share of taxes on consumption in total tax revenue has remained relatively stable since 1995, except during the GFC. During the GFC, consumption tax revenues as a share of GDP declined by 0.36 percentage points on average (between 2007 and 2009) and reached their lowest point since 1992. This decrease was largely driven by a fall in VAT revenues in those countries that have a VAT in place, with both consumption tax and VAT revenues only returning to their pre-GFC level in 2012.

In 2018, countries fell into three groups with different levels of consumption taxes as a share of GDP (Figure 2.1): low (consumption tax-to-GDP ratios below 9%); mid (between 9% and 13%) and high (greater than 13%). The high consumption tax-to-GDP group in 2018 was entirely composed of European Union (EU) countries, while all countries with low consumption tax-to-GDP ratios except for Ireland were non-EU countries. With the exception of the highest group, the composition of these groups was broadly stable between 1995 and 2018, particularly since 2000.

Across the period, countries with the most marked changes in the level of consumption tax revenues as a share of GDP included Greece and Turkey, where the consumption tax-to-GDP ratios increased by 3.6 percentage points in both countries; and Canada and Ireland, where consumption taxes as a share of GDP decreased by more than 3 percentage points. In Canada, Greece and Turkey, these changes were largely driven by corresponding changes in the standard VAT rates, whereas the decrease in revenues in Ireland resulted from a change in the composition of GDP (Simon and Harding, 2020<sub>[1]</sub>).

**Figure 2.1. Consumption tax-to-GDP ratios in OECD countries: 1995, 2018; minimums and maximums between these dates**



Note: The shaded area shows the minimum and maximum consumption tax-to-GDP ratio for each country, regardless of year.  
Source: Authors' calculations based on OECD Revenue Statistics (2020).

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The mix of consumption taxes has changed markedly over the last 40 years, as the growing share of value-added taxes (VAT)<sup>3</sup> has displaced other forms of consumption taxes in most OECD countries (see chapter 1). In 2018, VAT revenues as a share of total consumption tax revenues accounted for almost two-thirds (61.3%) on average and more than 50% in all but three OECD countries, Australia, Turkey and the United States (which does not have a VAT). Excises accounted for, on average, 22.1% of total consumption tax revenues in 2018.

### Box 2.1. Decomposing consumption tax revenues as a share of GDP

Following (Simon and Harding, 2020<sup>[1]</sup>), consumption tax revenues as a share of GDP are decomposed using the corresponding conceptual tax base<sup>4</sup>, as set out in equation (1).

$$\frac{\text{consumption tax revenues}}{GDP} = \underbrace{\frac{\text{consumption tax revenues}}{\text{consumption}}}_{\text{Consumption tax revenues as a share of the corresponding conceptual tax base, the ITR on consumption.}} \times \underbrace{\frac{\text{consumption}}{GDP}}_{\text{The conceptual tax base as a share of GDP.}} \quad (1)$$

The decomposition in equation (1) allows the impact of a change in the conceptual tax base, consumption, to be isolated. The Implicit Tax Rate (ITR) on consumption demonstrates the effect of changes in the consumption tax itself, i.e., base broadening (including for domestic and cross-border trade) and changes in the headline rates, as well as the effect of changes in compliance or informality on consumption tax revenues as a share of GDP. Consumption as a share of GDP captures all other changes in the economic environment that affect the consumption tax-to-GDP ratio, i.e., changes in GDP and its components.

To understand what drives the changes in consumption as a share of GDP, data from the OECD National Accounts is used to illustrate changes in the different elements of GDP as well as in the composition of consumption, which in turn can influence the level of the ITR.

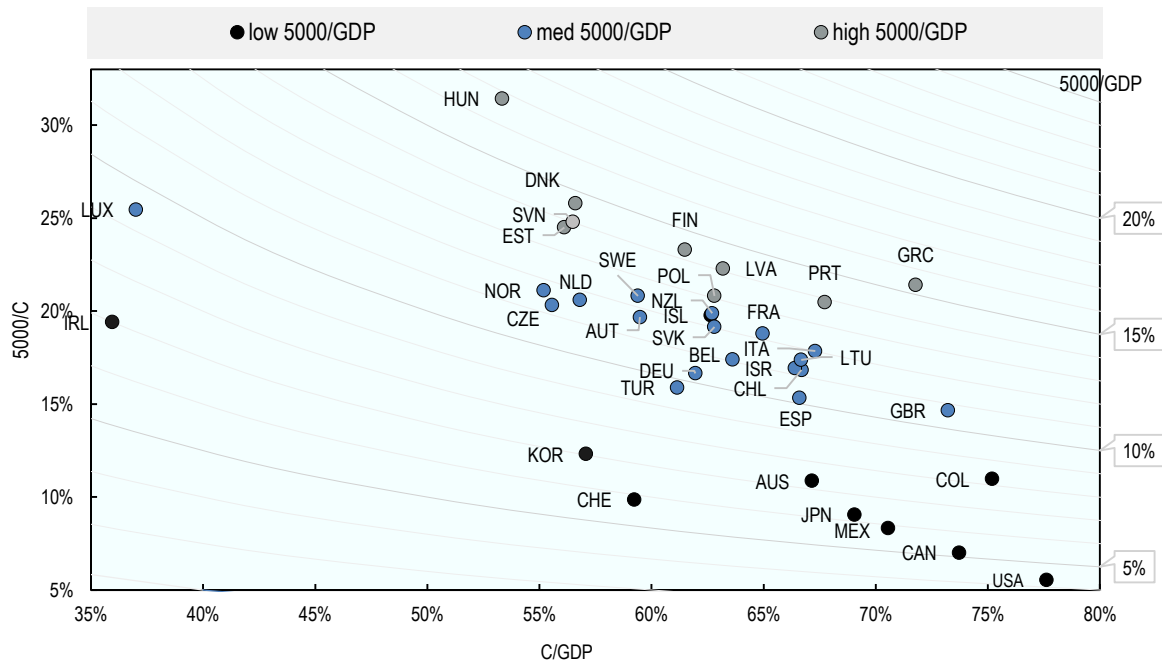
In a second step, a decomposition of VAT revenues provides further insights into the drivers of consumption tax revenues. Using the standard VAT rate,  $\tau_s$ , the VAT-Revenue-Ratio (VRR)<sup>5</sup> and consumption as a share of GDP, equation (2) serves to illustrate the impact of changes in tax rates and in tax bases on VAT revenues and hence on consumption tax revenues more generally (Simon and Harding, 2020<sup>[1]</sup>):

$$\frac{\text{VAT revenues}}{GDP} = \tau_s \times \underbrace{\left[ \frac{\text{VAT revenues}}{\text{consumption} \times \tau_s} \right]}_{\text{VAT-Revenue-Ratio (VRR)}} \times \frac{\text{consumption}}{GDP} \quad (2)$$

### The drivers of consumption tax revenues in OECD countries

The ITR on consumption is the primary determinant of overall levels of consumption tax revenues to GDP in most OECD countries, although its importance varies across countries (Figure 2.2). Within the consumption tax-to-GDP groups identified above, countries vary widely with respect to their levels of consumption as a share of GDP, while their ITRs are more similar, with the exception of Luxembourg and Ireland.<sup>6</sup> Nevertheless, the drivers of these ratios can differ significantly among countries with similar levels of consumption taxes as a share of GDP.

Figure 2.2. Decomposition of consumption tax revenues as a share of GDP, 2018



Note: The graph shows the decomposition of consumption tax revenues across OECD countries according to equation (1). The horizontal axis shows consumption as a share of GDP and the vertical axis shows the ITR on consumption. Consumption tax revenues as a share of GDP, given by the product of the two shares, are equal to the area under and to the left of each dot. Therefore, countries along each of the curved lines have the same level of consumption taxes as a share of GDP (as indicated on the right side of the graph). The Czech Republic and the United Kingdom, for example, have similar levels of consumption taxes as a share of GDP (11.3% and 10.7%), but for different reasons: the Czech Republic has a higher ITR on consumption but lower consumption as a share of GDP.

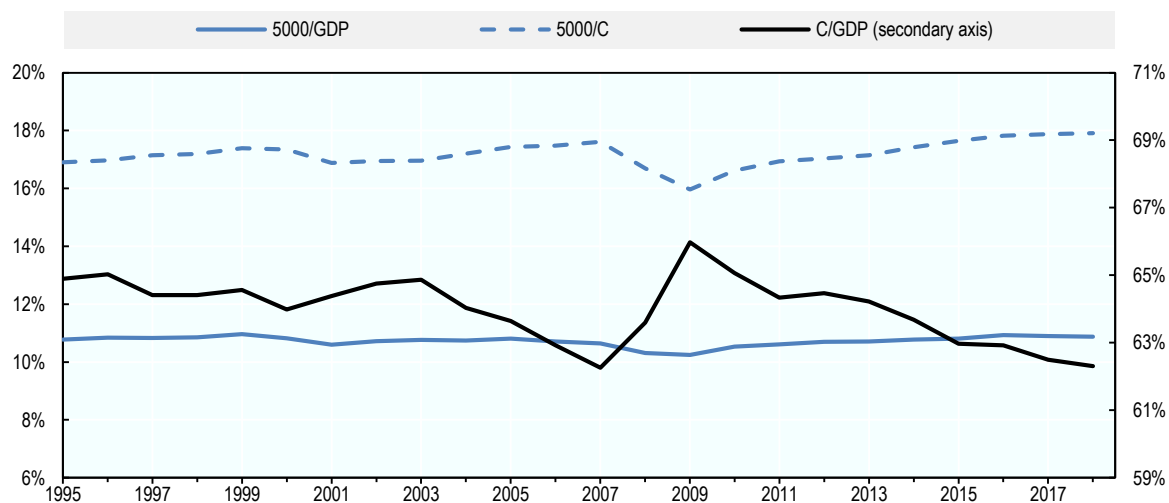
Source: Authors' calculations based on OECD National Accounts and OECD Revenue Statistics (2020).

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Changes in the OECD average consumption tax-to-GDP ratio and its components between 1995 and 2018 can be segmented into four distinct periods (Figure 2.3):<sup>7</sup>

- Prior to 2003, average consumption tax revenues as a share of GDP (5000/GDP) remained relatively stable, despite small fluctuations in consumption expenditure relative to GDP (C/GDP).
- In the years leading up to the GFC, average consumption as a share of GDP fell from 64.9% to 62.3%, while a slight increase in the ITR on consumption led the average consumption tax-to-GDP ratio remaining relatively stable around 10.8% until 2007.
- During the GFC, the ITR on consumption decreased in every OECD country in at least one year, causing the OECD average ITR to decrease from 17.6% to 16.0%. Despite a strong increase in average consumption as a share of GDP, the average consumption tax-to-GDP ratio fell by more than 3.5%, reaching a low of 10.2% in 2009.
- Since then, consumption tax revenues as a share of GDP have returned to their 1995 level, while consumption as a share of GDP was slightly lower (2.6 percentage points) and ITRs were slightly higher (1.0 percentage points) in 2018 than in 1995, on average.

**Figure 2.3. Consumption tax revenues as a share of GDP and its components in percentages, OECD average, 1995-2018**



Note: Consumption tax revenues are decomposed according to equation (1).

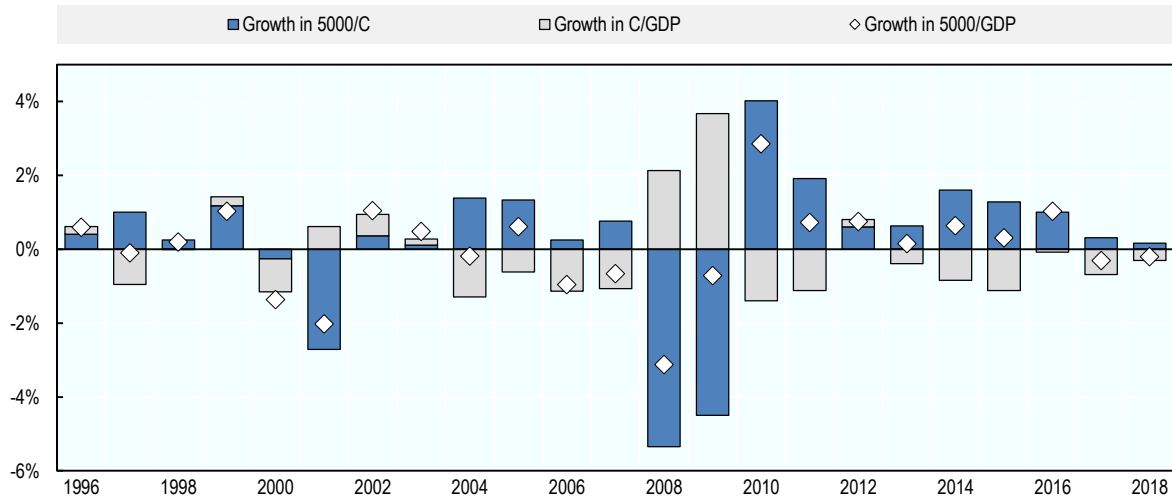
Source: Authors' calculations based on OECD National Accounts and OECD Revenue Statistics (2020).

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During the GFC, changes in consumption tax revenues were larger than in other years and significantly different in terms of composition. Over the period from 1995 to 2018, changes in consumption taxes as a share of GDP were driven primarily by changes in the ITR on consumption, as shown in Figure 2.4. However, while the direction of change in average consumption taxes as a share of GDP was the same as the ITR on consumption in almost every year, the magnitude of change in consumption tax revenues was strongly influenced by average consumption expenditure as a share of GDP. In all but five years, the changes in the consumption tax base and in the implicit tax rate went in opposite directions, offsetting each other. In contrast to other years, the average ITR on consumption fell in 2008 and 2009 to a significant extent, while the share of consumption to GDP increased sharply in the same years.

This implies that the key avenue through which the GFC impacted consumption tax revenues was by decreasing ITRs, rather than consumption – and that an increasing share of consumption in GDP offset the fall in ITRs and stabilised consumption tax revenues during the GFC.

**Figure 2.4. Annual growth rates (logged) in consumption taxes as a share of GDP and its components, OECD average, 1995-2018**



Note: Consumption tax revenues are decomposed according to equation (1).

Source: Authors' calculations based on OECD National Accounts and OECD Revenue Statistics (2020).

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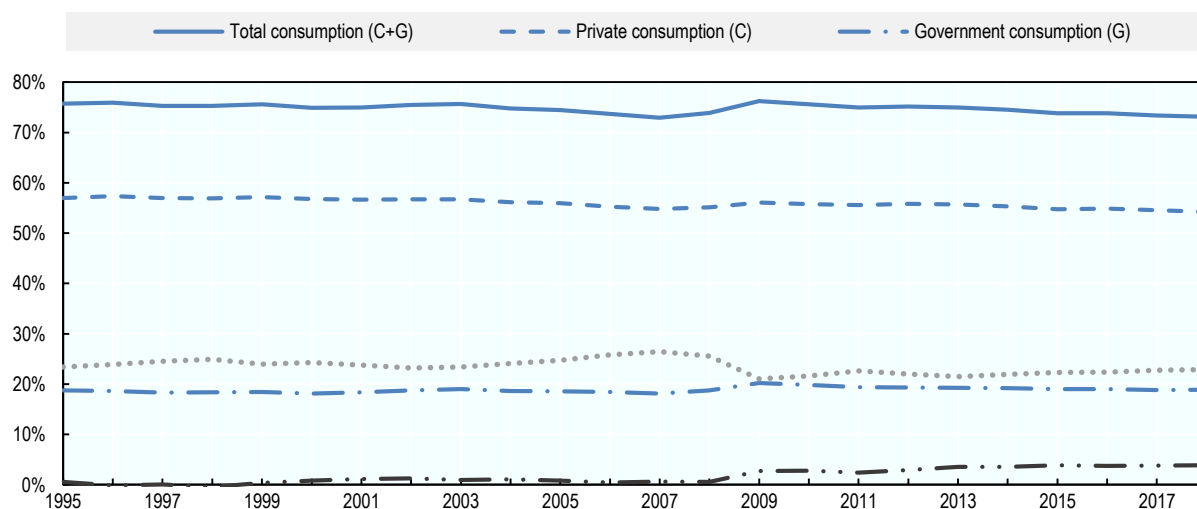
### **Changes in consumption as a share of GDP during the GFC**

The increase in consumption as a share of GDP during the GFC resulted from a change in the level of other GDP aggregates, rather than due to an increase in the level of consumption. Figure 2.5 reveals marked differences in the composition of GDP prior to, during and after the GFC. Between 2004 and 2007, higher growth in investment than in consumption in the majority of countries caused consumption as a share of GDP to decrease, on average. During the GFC, investment as a share of GDP decreased by 5.4 percentage points on average, primarily due to decreases in inventories and in machinery investment<sup>8</sup>, while government consumption raised average total consumption to a temporary high of 76.2% of GDP in 2009.

After the GFC, average net exports as a share of GDP have been increasing, while both private and government consumption have, on average, slightly decreased relative to GDP, causing total consumption as a share of GDP to return to around its pre-GFC level in 2015. In fact, total consumption as a share of GDP has remained stable over time in most OECD countries, with an average country standard deviation of 2.3% over the period. Compared to 1995, the average composition of GDP in 2018 showed higher levels of government consumption (0.1 percentage points) and lower levels of private consumption (2.7 percentage points).

**Figure 2.5. Major expenditure aggregates as a share of GDP (non-cumulative), OECD average, 1995-2018**

As % of GDP



Note: Decomposition of GDP according to the expenditure approach:  $GDP = C + G + I + (EX - IM)$ . Private consumption expenditure includes private household consumption and final consumption expenditure of non-profit institutions serving households (NPISH). Unweighted average of all OECD countries. For Turkey, where data on investment as a share of GDP was not available, the share was approximated as the residual of the equation.

Source: Authors' calculations based on OECD National Accounts.

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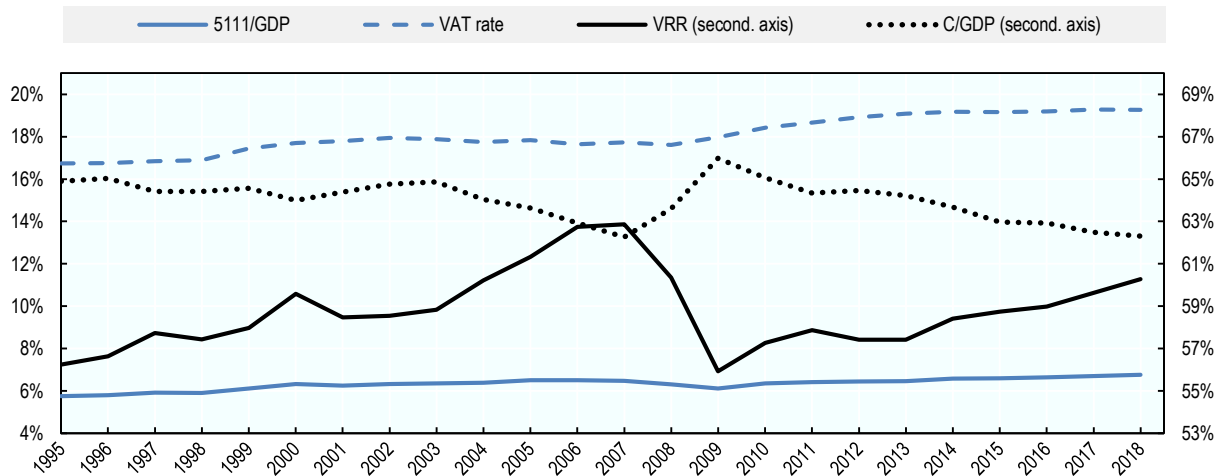
### **Changes in the ITRs on consumption**

The main driver of changes in the OECD average ITR on consumption is VAT (Simon and Harding, 2020<sub>[11]</sub>). To provide additional insights on the drivers of changes in consumption tax revenues, Figure 2.6 separates changes in the VAT revenues as a share of GDP (5111/GDP) in those countries that have a VAT system in place into changes in VAT rates and structures, as well as changes in the consumption base.

Both on average and in the individual countries, changes in the VRR have been the main driver of changes in VAT revenues as a share of GDP across the period, and can explain most of the drop in ITRs during the GFC. During the GFC, the average VRR dropped by 6.8 percentage points, as VAT revenues fell back to their level from 1995, before increasing again slowly post GFC.



**Figure 2.6. VAT revenues as a share of GDP and its components in percentages, OECD average, 1995-2018**



Note: VAT revenues are decomposed according to equation (4).

Source: Authors' calculations based on OECD National Accounts and OECD Revenue Statistics (2020).

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In light of significant fluctuations in the VRR, changes in standard VAT rates as well as in the consumption base relative to GDP stabilised VAT revenues. The average standard VAT rate increased from 2008 onwards and reached a plateau of 19.2% in 2014, when average VAT revenues as a share of GDP exceeded their pre-GFC level. In 2018, average VAT revenues reached their highest level throughout the period, at 6.8% of GDP. These developments in the average standard VAT rate over time reflect a number of important policy changes in OECD countries, as explained in more detail in Box 2. Although changes in standard rates in the individual countries have been much less frequent than for the OECD average, they have contributed considerably to the stability in consumption tax revenues as a share of GDP.

Nevertheless, the average ITR on consumption in 2018 was only slightly above its pre-GFC level, while standard VAT rates are, on average, 1.5 percentage points higher than prior to the GFC. This is the result of a number of macroeconomic and policy changes that narrowed the VAT base, namely: i) the implementation of new or additional reduced VAT rates (see Box 2); ii) changes in the composition of consumption expenditure; and iii) changes in VAT compliance.

## Box 2.2. VAT rates and structures in OECD countries between 1995 and 2018

The Value Added Tax (VAT) (and its equivalent in several jurisdictions, the Goods and Services tax, or GST) is a specific type of turnover tax levied at each stage in the production and distribution process. Although the liability for VAT falls on the suppliers of goods or services, the tax burden is designed to fall on final consumers, making the VAT a tax on final consumption of goods or services.

### Standard VAT rates

In 2018, standard VAT rates in the OECD ranged from 27% in Hungary to less than 10% in Japan, Switzerland and Canada<sup>9</sup>. Compared to 2005, nearly two thirds of OECD countries (22) increased their standard rates.<sup>10</sup>

The developments in the average standard VAT rate over time reflect a number of important policy changes in OECD countries. Four OECD countries introduced their VAT after January 1995: Latvia and Switzerland (both in 1995), Slovenia (in 1999) and Australia (in 2000). Prior to the GFC, the standard VAT rate remained stable in most countries, with the majority of countries maintaining a rate between 15% and 22%.

From 2007 to 2009, six OECD countries (Estonia, Hungary, Israel, Ireland, Latvia and Lithuania) increased their standard VAT rates as part of their fiscal consolidation efforts, while Portugal and the United Kingdom temporarily decreased their standard rates to stimulate the economy. These changes in VAT rates (both positive and negative) across OECD countries caused the average standard rate to decrease temporarily, from 17.7% in 2007 to 17.6% in 2008, but to increase again to 18.0% in the following year.

Between 2009 and 2014, and in large part as a response to the GFC, 23 countries raised their standard VAT rate at least once, 17 of which were EU member countries. This resulted in an increase in the OECD average standard rate to 19.2% in 2014, since when it has slowly increased to 19.3% in 2018. The average standard VAT rate of the 22 OECD countries that are members of the EU was at 21.7% in 2018, which is significantly higher than the OECD average. The standard VAT rate generally applies to all goods and services, unless advised differently by legislation. However, most OECD countries continue to apply a wide variety of reduced rates and exemptions to support various policy objectives.

### Reduced rates and exemptions

During the period from 1995-2018, most OECD countries have relied primarily on increases in standard VAT rates rather than base-broadening reforms. A number of countries (France, Hungary, Ireland and the Slovak Republic) implemented new or additional reduced VAT rates between 2009 and 2014, and most countries that have increased their standard VAT rate since the GFC have also increased their reduced rates, although generally to a lesser extent. In Japan, an increase in the standard VAT rate from 8% to 10% in October 2019 was accompanied by the introduction of a reduced rate of 8%. To date, all OECD countries that have a VAT system in place apply one or more reduced rates, with the exception of Chile.

In most OECD countries, a number of goods of services are exempt from VAT, i.e., they are taxed on their inputs rather than their outputs. Common exemptions across most OECD countries include financial services, expenditure on education and the letting of immovable property. Government consumption is exempt from VAT in all OECD countries except for New Zealand, where government activities are fully taxable under the VAT.<sup>11</sup> For further information on VAT rates and structures in OECD countries, see OECD Consumption Tax Trends (2020).

Source: OECD Consumption Tax Trends (2020).

The pattern of consumption, i.e., the composition of consumption expenditure, typically changes over the economic cycle. As can be seen from Figure 2.7, shifts in consumption patterns affected consumption tax revenues through two main channels during the GFC: by increasing both the share of government consumption and the share of private consumption of necessity goods relative to total consumption.

On average across OECD countries, government expenditure fluctuated between 24.4% and 25.1% of total consumption until 2007 inclusively, before it increased sharply to 26.5% in 2009. In those countries where government consumption is exempt from VAT, these increases in public spending increase the share of the VAT base that is input- rather than output-taxed, which reduces the VRR and, *ceteris paribus*, decreases VAT revenues as a share of GDP.

The composition of private consumption also changed over the economic cycle, as consumers decreased their expenditure on luxury goods and services, which increased the share of expenditure on necessities<sup>12,13</sup> (Sancak, Velloso and Xing, 2010<sub>[2]</sub>). The average private expenditure on luxury goods increased from 62.9% of total consumption in 1995 to its peak of 65.2% in 2007, before dropping by nearly two percentage points in the following two years. Meanwhile, the average share of expenditure on necessities in total consumption increased relatively steadily between 2007 and 2015, resulting in a 8.3% increase in the average share across this period. In the presence of reduced VAT rates on necessity goods, these shifts in private consumption reduce the share of the tax base that is subject to the standard VAT rate, thereby reducing the VRR.

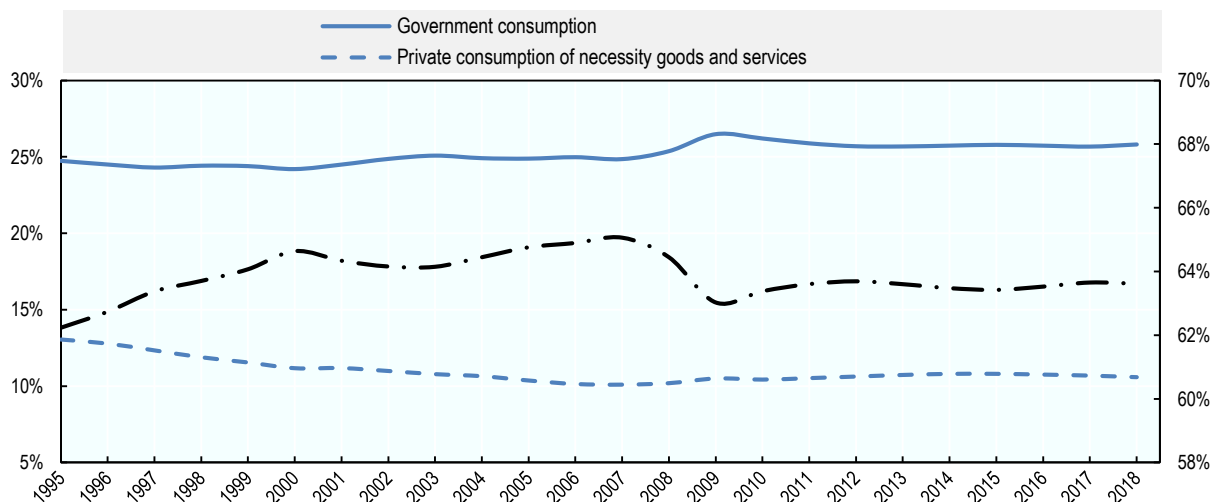
Between 2007 and 2009, when the average expenditure on necessity goods as well as government services as a share of consumption increased sharply, the average VAT collection efficiency, as measured by the VRR, dropped significantly. Even though total consumption expenditure (in constant prices) stayed, on average, relatively stable during the GFC, these shifts in the consumption base, combined with reduced rates and exemptions in the VAT, contributed to a decrease in the VRR and thereby in consumption tax revenues.

In addition to changes in the pattern of consumption, an increase in taxpayer VAT noncompliance during the GFC adversely affected the VRR, thereby putting further downward pressure on VAT revenues (Ueda, 2017<sub>[3]</sub>); (Sancak, Velloso and Xing, 2010<sub>[2]</sub>).<sup>14</sup>

After the GFC, the shares of both government consumption and private consumption of necessities in total consumption have remained elevated. Government consumption has remained on a new higher level of around 25.8% of total consumption expenditure, with the majority of OECD countries (23) having higher levels of government consumption as a share of total consumption in 2018 than in 1995, by 2.0 percentage points on average. Average expenditure on necessity goods and services as a share of total consumption has decreased slightly following its increase between 2007 and 2015. As a result, increases in standard rates do not translate fully into increases in the average implicit VAT rate, causing VAT revenues as a share of GDP to remain close to their long-run average, despite standard VAT rates in OECD countries being significantly higher now than prior to the GFC.

**Figure 2.7. Shares of major consumption expenditures (non-cumulative), OECD average, 1995-2018**

As % of total consumption expenditure



Note: The share of expenditure on food and non-alcoholic beverages in private consumption expenditure has been used as a proxy of the share of necessity goods and services. The residual has been used as a proxy for the expenditure on luxury goods and services. Data on necessity goods and services was not available for Colombia until 2005, Chile until 2012, Korea until 1999 and Turkey until 2008 inclusively.

Source: Authors' calculations based on OECD National Accounts.

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## Consumption tax revenues during COVID-19

Consumption tax revenues are affected both by macroeconomic and policy changes, including changes in the level and composition of expenditure and to the rate and base of VAT. During crises, these forces affect consumption tax revenues in multiple ways.

This Special Feature has considered the impact of the GFC on consumption tax revenues as a case study, which can provide insights into the likely impact of the COVID-19 crisis. On average across the OECD, during the GFC, the overall level of consumption remained relatively stable, while consumption tax revenues and VAT revenues in particular decreased sharply. This fall in revenues was primarily due to a shift in consumer spending towards necessity goods and services, often exempt or taxed at lower or zero VAT rates, as well as an increase in the consumption of government and public sector services, which are exempt from VAT. In addition, a temporary increase in taxpayer non-compliance decreased VAT revenues. However, partly offsetting these impacts, the size of the consumption tax base actually increased as a share of GDP, largely due to strong decreases in investment. Since the GFC, many of the changes to consumption patterns have not reversed, which has left VAT systems more exposed to economic shocks, particularly in countries with low VRRs and high shares of government consumption, and especially if a crisis directly affects private consumption rather than investment.

The current COVID-19 crisis is likely to have an even bigger impact on consumption tax revenues than the GFC had, because it affects consumption directly and to a far greater extent. Countries imposed unprecedented health measures that have effectively shut down large parts of the economy and eroded business and consumer confidence, which caused a sharp decrease in economic activity. These combined effects of the health crisis and the policy response decrease consumption tax revenues through a number of channels.

During the emergency phase of the COVID-19 crisis, when shops and restaurants were closed and consumers were asked to stay at home, consumer spending in OECD countries decreased significantly. In major advanced economies, consumer spending is projected to have plummeted by up to one-third during this period (OECD, 2020<sup>[4]</sup>), which, despite possible increases in online sales, has a direct and immediate impact on VAT revenues. In the face of a combined supply-side and demand-side shock (reduced or delayed spending), governments in many countries introduced various measures to improve business liquidity, including deferring VAT payments and accelerating VAT refunds (OECD, 2020<sup>[5]</sup>). While these measures are an important short-term response, they will likely lead to a reduction in VAT revenues in the short-run.

At the onset of the COVID-19 crisis, some of the changes in consumption patterns mirrored the GFC. The earliest data from household surveys (see e.g. (CBS, 2020<sup>[6]</sup>), (Insee, 2020<sup>[7]</sup>)) and from household bank account transaction data (Baker et al., 2020<sup>[8]</sup>) show that households spent a larger share of their total expenditure on necessities, which directly reduced VAT revenues as these items are often taxed at reduced or zero VAT rates. At the same time, many governments increased their healthcare spending and introduced large-scale expenditure initiatives, with government spending projected to rise by, on average, between 4.0% and 4.5% in 2020 (OECD, 2020<sup>[9]</sup>). As these areas of expenditure are often exempt from VAT, consumption tax revenues are expected to increase less than in proportion to the increase in government spending.

The COVID-19 crisis will also likely cause a temporary increase in business insolvencies and bankruptcies, further decreasing revenues, and unlike during the GFC, excises and fuel taxes are also falling as a result of confinement, travel bans and the closure of bars and restaurants.

The reopening of economies has reversed some of the fall in consumption, and revenues are starting to pick up again. As consumer restrictions have been lifted, private spending, particularly on durable goods, has risen, increasing both total consumption and tax revenues. However, private spending on services – such as a haircut or a restaurant meal – is unlikely to increase enough to make up for the falls during the shutdown. To spur consumer spending, some countries (e.g. Germany and Norway; see (OECD, 2020<sup>[10]</sup>)) have introduced temporary reductions in standard and reduced VAT rates, similarly to the GFC. Nevertheless, in some sectors such as tourism and travel, spending is likely to remain depressed into the medium term.

Over the course of the year 2020, the level of consumer spending in OECD countries is projected to be, on average, around 8.5% lower than in the previous year (10.8% lower if a second outbreak occurs in all OECD countries towards the end of 2020), before picking up through 2021 (OECD, 2020<sup>[9]</sup>). Meanwhile, the average level of investment in OECD countries in 2020 is projected to decrease by around 10.5% compared to 2019 (by 12.8% in case of a second outbreak) (OECD, 2020<sup>[9]</sup>). With investment decreasing more strongly than consumption expenditure, consumption will increase as a share of GDP. As was the case during the GFC, this offsets part of the fall in the ITR and helps stabilise consumption tax revenues as a share of GDP. However, in the event of a renewed virus outbreak, uncertainty would intensify further and for an extended period, with additional precautionary saving, lower household spending and substantially weaker investment prospects.

Consumption taxes are an important part of the toolkit that governments have to facilitate the economic and fiscal recovery after the COVID-19 crisis. Over time, consumption tax revenues will gradually increase as a share of GDP to regain their pre-crisis levels, as private spending returns to pre-crisis patterns and governments take action to restore lost revenues. In doing so, governments may wish to give careful consideration to how the structure of their VAT systems will affect the resilience of their tax system and its revenues in future economic downturns. Any changes to improve resilience will need to account for the complexity of VAT systems and consider likely behavioural responses as well as potential distributional impacts.

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## Annex 2.A. – Data on Implicit Tax Rates (ITRs) on consumption

Annex Table 2.A.1. ITRs on consumption (in %) across OECD countries, selected years

	1995	2000	2005	2007	2009	2011	2013	2015	2017	2018
AUS	12.2	13.0	12.8	12.1	11.4	10.8	11.8	11.1	11.1	10.9
AUT	19.2	20.4	19.7	19.4	18.9	19.4	19.4	19.7	19.8	19.7
BEL	17.1	18.3	18.4	18.5	17.0	17.3	17.1	16.9	17.3	17.4
CAN	11.9	11.8	11.3	10.5	7.0	6.8	6.7	6.9	7.0	7.0
CHL	19.3	18.7	18.2	17.9	15.7	16.9	16.7	16.9	16.6	16.8
COL	9.3	9.2	11.1	11.9	11.1	12.0	10.8	10.9	10.9	11.0
CZE	19.2	17.0	18.9	18.9	18.5	19.6	20.3	20.5	21.1	20.3
DNK	25.6	28.3	28.6	29.6	24.9	25.5	25.2	25.1	25.9	25.8
EST	18.0	19.5	21.2	24.0	23.9	23.7	22.9	24.4	24.9	24.5
FIN	23.0	24.6	23.1	22.3	20.5	22.1	22.6	21.9	22.9	23.3
FRA	18.0	17.5	16.5	16.2	15.2	16.8	17.1	17.7	18.3	18.8
DEU	15.6	16.0	16.0	17.5	17.3	17.4	16.8	17.0	16.3	16.7
GRC	15.9	16.0	14.9	15.7	13.8	16.9	18.3	19.3	21.0	21.4
HUN	27.5	26.0	23.4	24.7	25.6	27.6	30.7	32.8	30.1	31.4
ISL	23.5	24.0	25.2	24.6	17.0	17.6	17.7	18.5	20.7	19.8
IRL	22.5	23.9	23.4	21.9	17.0	17.3	18.4	20.2	20.2	19.4
ISR	18.7	17.6	17.8	17.6	17.2	17.9	17.9	18.3	17.1	16.9
ITA	15.9	17.1	15.2	15.8	14.9	16.3	16.8	17.5	18.0	17.8
JPN	6.4	7.5	7.4	7.2	6.8	6.9	6.9	9.2	9.6	9.0
KOR	14.0	14.0	12.8	12.7	12.2	12.4	12.2	11.7	12.6	12.3
LVA	14.4	15.6	17.3	17.2	16.7	17.2	18.6	20.3	21.0	22.3
LTU	15.5	16.1	15.5	16.8	14.8	16.6	15.7	16.6	17.3	17.4
LUX	17.8	22.8	25.6	27.2	26.3	27.8	28.4	25.6	24.6	25.4
MEX	5.6	6.6	5.9	6.1	6.4	6.5	5.9	8.6	8.2	8.3
NLD	17.4	18.3	18.9	19.4	18.0	18.1	18.3	19.2	20.3	20.6
NZL	19.3	18.1	18.2	16.9	16.8	18.6	18.8	19.7	19.6	19.9
NOR	25.5	27.1	23.8	25.4	22.0	22.2	21.8	21.0	21.1	21.1
POL	20.0	16.6	18.4	20.2	17.0	19.1	17.4	18.4	20.2	20.8
PRT	18.5	18.2	19.0	18.8	15.7	17.9	17.9	19.0	20.1	20.5
SVK	22.5	19.3	20.5	18.8	15.4	18.0	18.2	19.0	19.2	19.1
SVN	23.9	22.6	23.0	24.0	21.7	21.9	24.3	25.3	24.9	24.8
ESP	13.2	15.3	15.5	14.5	9.6	11.9	14.0	15.2	15.2	15.3
SWE	20.8	20.3	20.8	21.3	21.1	21.0	20.1	20.4	20.9	20.8
CHE	8.5	9.6	9.9	10.3	10.0	10.3	10.2	10.0	10.0	9.9
TUR	9.0	14.3	17.8	16.9	16.0	18.0	18.2	17.6	17.2	15.9
GBR	14.6	14.5	13.3	13.2	12.0	14.8	14.6	14.8	14.7	14.7
USA	6.4	6.0	5.8	5.6	5.1	5.4	5.6	5.6	5.4	5.5
OECD average	16.9	17.3	17.4	17.6	16.0	16.9	17.1	17.6	17.9	17.9

Source: Authors' calculations based on OECD National Accounts and OECD Revenue Statistics (2020).

StatLink  <https://doi.org/10.1787/888934209837>

## Notes

<sup>1</sup> (Simon and Harding, 2020<sub>[1]</sub>) is a recent OECD Taxation Working Paper that decomposes consumption tax revenues in OECD countries over the period 1995-2017 into the implicit tax rate (ITR) and consumption relative to GDP. Using the GFC as a case study, the paper identifies how economic downturns affect consumption tax revenues.

<sup>2</sup> This analysis covers data from 1995 until 2018, the latest year for which comprehensive *Revenues Statistics* data is available for all OECD countries.

<sup>3</sup> The acronym “VAT” refers to any national value-added tax (VAT) and its equivalent in several jurisdictions (goods and services tax, or GST), as described in (OECD, 2018<sub>[11]</sub>). Currently, 36 of the 37 OECD member countries operate a VAT, the only exception being the United States.

<sup>4</sup> The conceptual tax base is approximated by using final consumption expenditure in the OECD National Accounts (NAs) under item P3, measured according to the domestic concept. The numerator of the ITR on consumption comprises all revenues under the *Revenue Statistics* heading 5000 *Taxes on goods and services* except for 5124 *Taxes on exports*, 5125 *Taxes on investment goods* and 5127 *Other taxes on international trade and consumption*. For a discussion of this methodology as well as a review of other existing literature, see (Simon and Harding, 2020<sub>[1]</sub>).

<sup>5</sup> The VRR is a widely-used tool for evaluating the efficiency of a VAT system that normalises VAT revenues by reference to a theoretical situation where the standard VAT rate is applied to all final consumption (see for example (OECD, 2018<sub>[11]</sub>) and (CASE and IHS, 2018<sub>[12]</sub>)). For a technical discussion on the factors influencing the VRR, see (OECD, 2018<sub>[11]</sub>).

<sup>6</sup> (Simon and Harding, 2020<sub>[1]</sub>) explain the causes of the relatively low levels of consumption as a share of GDP in Luxembourg and Ireland.

<sup>7</sup> See Annex C for ITRs on consumption for all OECD countries in selected years. For individual country results for the period 1995-2017, see (Simon and Harding, 2020<sub>[1]</sub>).

<sup>8</sup> Data on the major components of investment expenditure is available from the NAs for all countries except for Chile, Israel and Turkey.

<sup>9</sup> This is the GST rate at the federal level only. The combined federal GST and harmonized sales taxes applied in some Canadian provinces are often more than 10%.

<sup>10</sup> The OECD report *Consumption Tax Trends (2020)* contains several tables showing the evolution of VAT rates over time, the year of implementation of VAT, and the ratio of VAT revenues in OECD countries in 2018.

<sup>11</sup> Some countries have provided mechanisms to offset the negative effects of exemptions, such as targeted VAT refunds, full or partial right to deduct VAT on inputs or budgetary compensation, see OECD, *Consumption Tax Trends 2020*, for more details.

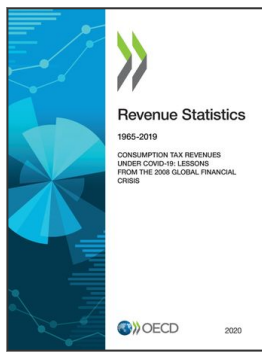
<sup>12</sup> To identify shifts in the composition of private consumption, the share of food and non-alcoholic beverages in consumption is used as a proxy of the share of necessity goods and services in the tax base (see e.g. (Sancak, Velloso and Xing, 2010<sub>[2]</sub>) and Simon and Harding (2020)).

<sup>13</sup> Changes in the pattern of private consumption could also be analysed by decomposing private consumption into the consumption of durable goods, semi-durable goods, non-durable goods and services (see e.g. (Cevik et al., 2019<sub>[13]</sub>)). Given that a large part of the service sector (e.g. financial services) is exempt from VAT in almost all OECD countries, an increasing share of services in the economy can, for a given VAT rate, reduce the VRR. The average share of private expenditure on services in total



consumption followed a trend increase from 1995 to 2018, which was only interrupted during the GFC, when private consumption of both goods and services decreased slightly.

<sup>14</sup> Future studies could complement the present analysis by decomposing the VRR into compliance and policy gaps to further explore the extent to which changes in policy and compliance impact consumption tax revenues in OECD countries (see (Simon and Harding, 2020<sup>[1]</sup>) and (OECD, 2018<sup>[11]</sup>) for further details).



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