

# **2** The initial impact of COVID-19 on OECD tax revenues

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Chapter 2 examines the initial impacts of COVID-19 on tax revenues in OECD countries. It uses preliminary data on revenues by tax type to further examine the impact of the pandemic on personal and corporate income taxes, social security contributions, property taxes, VAT and excises, considering changes in nominal terms and as a share of GDP.

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## Introduction

The COVID-19 crisis has significantly affected OECD countries, leading to a contraction in the economy and a worsening of inequality, with particularly severe effects for lower income households and other vulnerable groups. COVID-19 has also reduced tax revenues in two-thirds of OECD countries both via support measures provided through the tax system and through the flow-on impact of the economic crisis on revenues. When coupled with falls in non-tax revenues, the cost of support measures delivered outside the tax system, and increases in health and social expenditure, government fiscal positions have significantly deteriorated. OECD governments borrowed USD 18 trillion from the markets in 2020, equal to almost 29% of GDP. Compared to 2019, this was 60% more in absolute terms and 12 percentage points higher as a share of GDP (OECD, 2021<sup>[1]</sup>)

However, unlike the global financial crisis (GFC) and despite the widespread falls in nominal tax revenues, the pandemic has not resulted in sharp falls in OECD tax-to-GDP ratios. This chapter uses preliminary data for 2020 to explore the initial impact of the crisis on tax revenues, the relationship between changes in tax levels and in GDP, the types of taxes most affected by the crisis, and similarities and differences with revenue changes in the first year of the GFC.

## Overview: changes to total tax revenues, GDP and the tax-to-GDP ratio

### ***Impact of COVID-19: changes in 2020 relative to 2019***

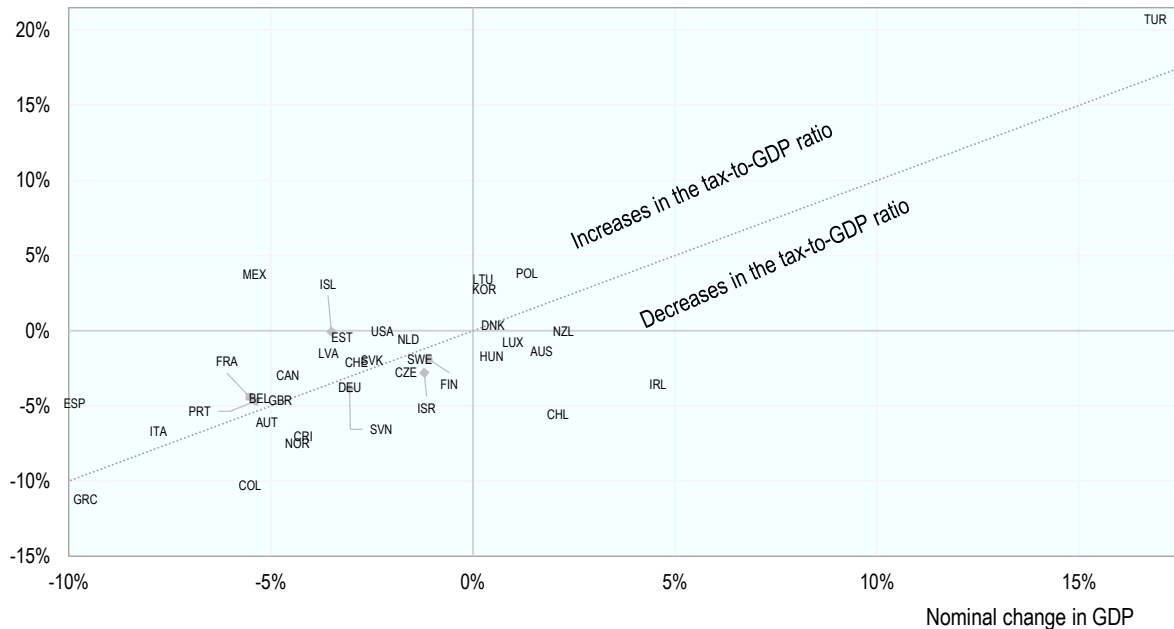
As highlighted in chapter 1, the average OECD tax-to-GDP ratio increased by 0.1 p.p. in 2020 relative to 2019. Increases in the tax-to-GDP ratio were observed in 20 out of 38 OECD countries (Figure 1.2). However, the increases in tax-to-GDP ratios occurred despite falls in nominal tax revenues in 31 OECD countries between 2019 and 2020, with an average fall (across all countries for which data are available) of 2.1%. Although nominal tax revenues fell in most OECD countries, nominal tax revenues fell by less than nominal GDP in 14 of these countries (Figure 1.3), leading to an increase in their tax to GDP ratios. Therefore, while taxes represented a higher share of total GDP in 2020 than in 2019, this is due to GDP (the denominator) in most countries shrinking by more than tax revenues (the numerator) during the COVID-19 crisis.

Figure 2.1 shows the relative falls in nominal taxes and nominal GDP between 2019 and 2020 for all OECD countries. Only five OECD countries had increases in both tax revenues and GDP (Denmark, Korea, Lithuania, Poland and Turkey), with all but Denmark having larger increases in nominal tax revenues than GDP and thus an increase in their tax-to-GDP ratios. Including these five countries, eleven countries experienced increases in nominal GDP and six had increases in nominal tax revenues. The remaining 25 OECD countries experienced falls in both GDP and tax revenues, with the consequent impact on their tax-to-GDP ratio depending on which of the two components fell most.

**Figure 2.1. Changes in nominal tax and nominal GDP, 2019-2020**

Year-on-year % change

Nominal change in tax revenues



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. Data for Australia and New Zealand show the change between the fiscal years 2018 and 2019 (as both countries report tax revenues on a fiscal year basis that includes Q2 of 2020 in the 2019 fiscal year); data for Japan are not included as data on SSC revenues is not available. See Box 2.2 for more information. The diagonal line across the graph represents the point at which the change in tax revenues and in GDP were of the same magnitude and therefore the point at which the tax-to-GDP ratio remained unchanged. Countries above the diagonal line had increases in their tax to GDP ratios; countries below it, had falls.

Source: *Revenue Statistics 2021* and authors' calculations.

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### **How does the impact of COVID-19 on tax revenues compare to the GFC?**

The COVID-19 crisis led to widespread falls in GDP in OECD countries in 2020 (Figure 2.1). Before 2020, the most recent global economic crisis faced by OECD countries was the GFC. In 2008, overall economic growth remained positive in most OECD countries, although growth rates fell sharply in the fourth quarter, leading to negative annual growth rates, in real terms in approximately one-third of OECD countries. In 2009, the impacts of the GFC spread, with all OECD countries except Australia, Colombia, Israel, Korea, New Zealand and Poland recording strong negative real GDP growth between 2008 and 2009. The (weighted) OECD average GDP growth rate in 2009 was -3.4%, compared to 0.3% in 2008 and 3.0% in 2010 (OECD, 2021<sup>[2]</sup>).

### Box 2.1. Cautions in interpreting findings based on preliminary data for 2020

The indicators used in this chapter are based on preliminary data provided for the year 2020 as part of the data collection round for this year's edition of *Revenue Statistics*. Normally, the publication does not place emphasis on these preliminary data as they are subject to revisions in future years that can affect the magnitude, and less commonly, the direction, of change between the last two years of data. However, due to the interest in the tax revenue impacts of the COVID-19 pandemic, this special feature uses the indicators to provide an initial snapshot of what has happened to tax revenues during the crisis. Therefore, while the data should be treated with caution and the scale of the conclusions may be revised in future editions, they nonetheless present an important insight into the impact of COVID-19 on tax revenues across OECD countries.

Many important macroeconomic indicators, including Gross Domestic Product (GDP), are subject to revisions. Initial estimates are usually released around one to two months after the reference period, aiming to strike a balance between the accuracy and timeliness of the results, in order to properly support economic analysis and decision-making. In most countries, more complete and detailed data become available over time and National Statistical Offices (NSOs) progressively revise their estimates to further improve their accuracy. To obtain more insight in the role of revisions, the OECD is frequently conducting studies into the size and direction of revisions across OECD countries, the latest in 2018.

As a consequence of measures put in place by governments to reduce the spread of the Coronavirus (COVID-19), many NSOs have been facing unprecedented collection, compilation and methodological challenges. Challenges include those of a conceptual nature, for example, the appropriate treatment of education and other government services that were temporarily closed, severely diminished or switched to a virtual format. In addition, practical challenges, such as an inability to collect certain data sources or a significant decline in response rates of business and household surveys, inevitably affected data quality. Consequently, the initial estimates released during the pandemic may be subject to larger and more frequent revisions than normal.

That said, the compilation of GDP estimates involves a large number of data sources, many of which are non-prescriptive. As a result, NSOs have often been able to find alternative or proxy data sources to assist in overcoming specific data gaps. In many cases, these temporary, but often more timely, data sources could be confronted and balanced with the existing methodology to maintain the quality of many national account outputs including GDP. Furthermore, the international statistical community developed additional guidance on how to cope with specific challenges as put forward by the pandemic, for example on how to record specific government support schemes and how to deal with seasonal adjustment during the pandemic. Therefore, while revisions may be slightly larger than normal, these additional efforts of the statistical community helped to minimise the severity of the revisions.

The pandemic may also have affected the accuracy of Revenue Statistics. Whereas tax authorities themselves have continued to provide the relevant information as normal, several countries provided extensions to their reporting entities during the pandemic which may have affected the initial estimates. In those cases, the data may be liable to larger than normal revisions. The preliminary data for 2020 may also be subject to larger than normal revisions due to the support measures introduced by governments to support households and businesses in the crisis, including the widespread use of tax deferrals, extension of filing deadlines and increased flexibility with the treatment of tax losses. Finally, if tax revenues are recorded when the tax liability is determined, rather than when the economic activity takes place (i.e. a pure accrual approach), there may be a lag or mismatch between the timing of the change in economic activity and the recording of tax receipts. This is particularly relevant when an economic shock takes place and when loss carry-back provisions are introduced or extended.

Source: OECD Statistics and Data Directorate, country inputs and authors' contributions.

Relative to the GFC, the COVID-19 pandemic led to a more severe global recession in the short term, but is expected to give rise to lower losses in the medium-term. In 2020, global GDP declined by about 3.5% while OECD GDP declined by about 4.8% in real terms,<sup>1</sup> significantly larger than the global contraction of 0.5% and the OECD contraction of 3.4% in 2009 (OECD, 2021<sup>[2]</sup>). The contraction was particularly pronounced in the second quarter of 2020, where OECD economies contracted by 11.6% (year-on-year growth rate based on seasonally adjusted volume data), a much sharper decline than the 4.7% observed in the first quarter of 2009 (the quarter most affected by the GFC). Despite the strong short-term economic shock in 2020, medium-term losses for global output are expected to be smaller than the GFC (IMF, 2021<sup>[3]</sup>). Global output in 2024 is anticipated to be approximately 3% lower than the projection made before COVID-19, while the downward adjustment was almost 10% after the GFC. This is mainly because the finance and banking sectors were at the centre of the GFC and had strong interconnections with the rest of the economy (IMF, 2021<sup>[3]</sup>). The smaller persistent shock of the COVID-19 pandemic is reflected in the V-shaped recoveries of global manufacturing in both advanced and developing countries in the second half of 2020, which were not seen during the GFC (IMF, 2021<sup>[3]</sup>). Nevertheless, there is an element of uncertainty in the current crisis due to the evolving nature of the pandemic, which could affect the global economic recovery.

Another difference between the GFC and the COVID-19 pandemic is the countries and sectors affected. The GFC spread across countries via the interconnected finance and banking sectors. Advanced countries were at the epicentre of the crisis and bore the brunt of its impact, while most developing countries were less affected and recovered more quickly (Kose, Sugawara and Terrones, 2020<sup>[4]</sup>). During COVID-19, emerging market and developing economies are expected to suffer more, partly because they are less financially equipped to provide sufficient support to mitigate the negative impacts: countries with larger pandemic-related fiscal responses tended to experience smaller losses (IMF, 2021<sup>[3]</sup>). While the finance and banking sectors were most affected during the GFC, the impact of COVID-19 pandemic fell predominantly upon contact-intensive service sectors such as tourism and hospitality. As a result, countries that are more reliant on these service sectors, such as small island states, have experienced greater losses.

The COVID-19 pandemic is both a health and an economic crisis that has affected the vast majority of the population, especially the poor and vulnerable, smaller businesses and the self-employed. Fiscal support from national governments in response to the pandemic has been much stronger than during prior crises. Global fiscal support amounted to USD 13.8 trillion in 2020, of which USD 7.8 trillion represented additional spending or foregone revenues and USD 6.0 trillion represented equity injections, loans, asset purchases or debt assumptions, guarantees and quasi-fiscal operations (IMF, 2021<sup>[5]</sup>). By contrast, the aggregate amount of fiscal stimulus packages from G20 economies<sup>2</sup> was around USD 820 billion in 2009 (IMF, 2009<sup>[6]</sup>). In addition, due to the different territorial impact of the pandemic, sub-national governments have played a more important role in developing differentiated responses and providing support for local needs. For example, measures regarding masks, business closures, lockdowns and vaccination programmes have been designed and implemented in close coordination with sub-national governments in many countries (OECD, 2021<sup>[7]</sup>).

The impact of the two crises on revenues has also differed, although between them, the two crises account for most of the falls in nominal tax revenues seen in OECD countries since 1995 (Figure 2.2). On average, the OECD tax-to-GDP ratio fell by 0.7 p.p. in 2009, driven by larger falls in tax revenues (an average of 5.3%) than in GDP (Table 2.1). Tax-to-GDP ratios fell in 29 OECD countries: in 20 of these countries, because tax revenues fell further than GDP; in seven, because tax revenues fell while GDP rose; and in the remaining two countries, because tax revenues increased more slowly than GDP. By contrast, in 2020, tax-to-GDP ratios fell in 18 countries: in 11 of these, because taxes decreased more quickly than GDP; in six, because taxes decreased while GDP rose; and in one (Denmark) because tax revenues rose marginally more slowly than GDP (Table 1.3).

**Figure 2.2. Changes in nominal tax and nominal GDP, all years**

Year-on-year % change



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. Outliers have been excluded to improve the readability of the figure.

Source: *Revenue Statistics 2021* and authors' calculations.

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**Table 2.1. Comparison of changes in nominal tax and nominal GDP**

Year-on-year % change

		Mean	Lower quartile	Median	Upper quartile
Tax	2009	-5.3	-7.2	-4.4	-2.4
	2020	-2.1	-4.6	-2.1	-0.4
GDP	2009	-2.7	-4.3	-2.4	-0.1
	2020	-2.1	-4.7	-2.7	0.3
Tax/GDP	2009	-0.7	-1.3	-0.5	0.1
	2020	0.0	-0.6	0.0	0.6

Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. The mean tax-to-GDP ratio in 2020 in this table differs from that shown in the other chapters in the report due to the use of the 2019 fiscal years for Australia and New Zealand in this chapter, for the reasons explained in Box 2.2.

Source: *Revenue Statistics 2021* and authors' calculations.

## Impact of the COVID-19 crisis on different tax types

COVID-19 has affected tax revenues through a variety of avenues. The tax policy measures implemented to support households and businesses have often directly reduced revenues via deferrals or reductions in tax liabilities, enhanced tax credits and allowances and temporary or permanent reductions in tax rates. The sharp reduction in economic activity due to lockdowns and other restrictions have also reduced labour

force participation, household consumption and business profits, further affecting tax revenues. However, government support measures may have indirectly bolstered affected revenues insofar as they were successful in reducing job losses and business closures.

### ***Use of support measures and key economic changes influencing revenues***

In relation to labour taxation, many countries introduced a range of tax reforms to support households, most of which included a revenue cost. The most common measures were administrative, including the full or partial deferral of personal income tax (PIT) and social security contribution (SSC) payments and waiver of interest and penalties (Figure 2.3). Tax filing deadlines were extended in many countries and a few countries accelerated refunds. These deferrals largely created differences in the timing of tax payments and may also lead to greater revisions in future years. A second common measure was the extension or introduction of new tax allowances and credits, either available to all taxpayers, or more commonly, targeted toward workers most heavily affected by the pandemic. Increased relief for teleworking expenses and provisions for the self-employed were also used in a few OECD countries. Thirdly, a few countries implemented PIT rate cuts or changes in tax thresholds. Typically these reduced tax liabilities for those on low incomes. For example, Australia increased the thresholds for lower income earners, a reform which had been planned prior to the crisis, while Austria reduced the lowest PIT rate and extended the application of the top PIT rate until 2025. On the other hand, several OECD countries implemented tax rate increases for high-income earners via the creation of a new top tax bracket and the Czech Republic moved from a flat to a progressive tax system. Finally, roughly one-quarter of OECD countries introduced timebound SSC waivers, often targeted to the most affected sectors or regions (OECD, 2021<sup>[8]</sup>; OECD, 2021<sup>[9]</sup>).

In addition to measures within the tax system to support households, job retention schemes including short-time work and wage subsidies were used extensively across OECD countries during the crisis. Many countries introduced new schemes or extended the provisions available under existing schemes in response to the crisis and uptake was significant: in April 2020, around 20% of employees in the OECD were supported via these schemes (OECD, 2021<sup>[10]</sup>). These schemes protected employees' wages and jobs, with positive implications for PIT and SSCs in the longer run and, in many (but not all) countries, payments to employees under these schemes were also taxable, artificially pushing up PIT and SSC revenues for these countries in 2020 (OECD, 2021<sup>[9]</sup>).

The economic crisis also affected PIT and SSC revenues. The pandemic led to a sharp rise in unemployment, particularly during quarter two. Although this increase reversed throughout 2020, unemployment levels remained higher across the OECD at the end of 2020 than in 2019. Labour force participation decreased in all countries, while the average number of hours worked by employees reduced significantly. These job losses and reductions in hours were concentrated in the most heavily affected sectors and among low-income earners, whereas the change in employment, hours worked and income were considerably less pronounced for higher income workers (OECD, 2021<sup>[10]</sup>).

Tax measures to support business liquidity and cash flow were also widely used in 2020, affecting corporate income tax (CIT) revenues. Common measures include:

- Deferrals of tax payments, filing extensions and flexible tax payment plans, applied in over 70% of OECD countries (Figure 2.3). Several OECD countries suspended or reduced prepayments of CIT, often targeted toward SMEs, and refunds of advance payments and CIT credits were accelerated in many jurisdictions. A handful of OECD countries, including Korea, Italy and Portugal provided limited tax waivers for SMEs and the self-employed (OECD, 2021<sup>[8]</sup>).
- Cuts to statutory corporate income tax (CIT) rates were limited and OECD rates remained relatively stable. A few countries continued with planned decreases of the statutory tax rate (e.g. Colombia and France) while others introduced targeted rate reductions for small businesses (e.g. Chile and Hungary).

- Several countries introduced provisions to improve business liquidity, including tax measures to reduce rental costs in Italy, France, Korea and Spain. Several countries temporarily increased the threshold for low-value asset write-offs to promote liquidity and investment.
- Changes to loss-offset provisions were commonly used, with 38% of OECD countries introducing new or enhanced loss carry-back rules during 2020 (Figure 2.3). In a few countries, accelerated refunds were made available in relation to these loss carry-backs. Increased use of carry-forward provisions was seen in a few OECD countries, notably Portugal and the Slovak Republic.
- Tax measures to support investment were provided in many countries, including immediate expensing of larger investments (e.g. Australia, the Czech Republic and Norway), accelerated tax depreciation schemes and enhanced deductions for investment in new machinery and equipment. Incentives were often targeted by sector, region, or by environmental impact, or designed to promote research and development (R&D) or foreign direct investment (FDI).

Similarly, deferrals of value-added tax (VAT) liabilities were introduced in almost all OECD countries, often combined with the suspension or reduction of interest and penalties; targeted to particular sectors, SMEs or the self-employed. VAT refunds were accelerated in 15 OECD countries to further enhance cash flow and relief for bad debts was often expanded. Finally, a range of administrative simplifications and tax filing extensions were introduced in a number of countries to reduce compliance costs (OECD, 2021<sup>[8]</sup>).

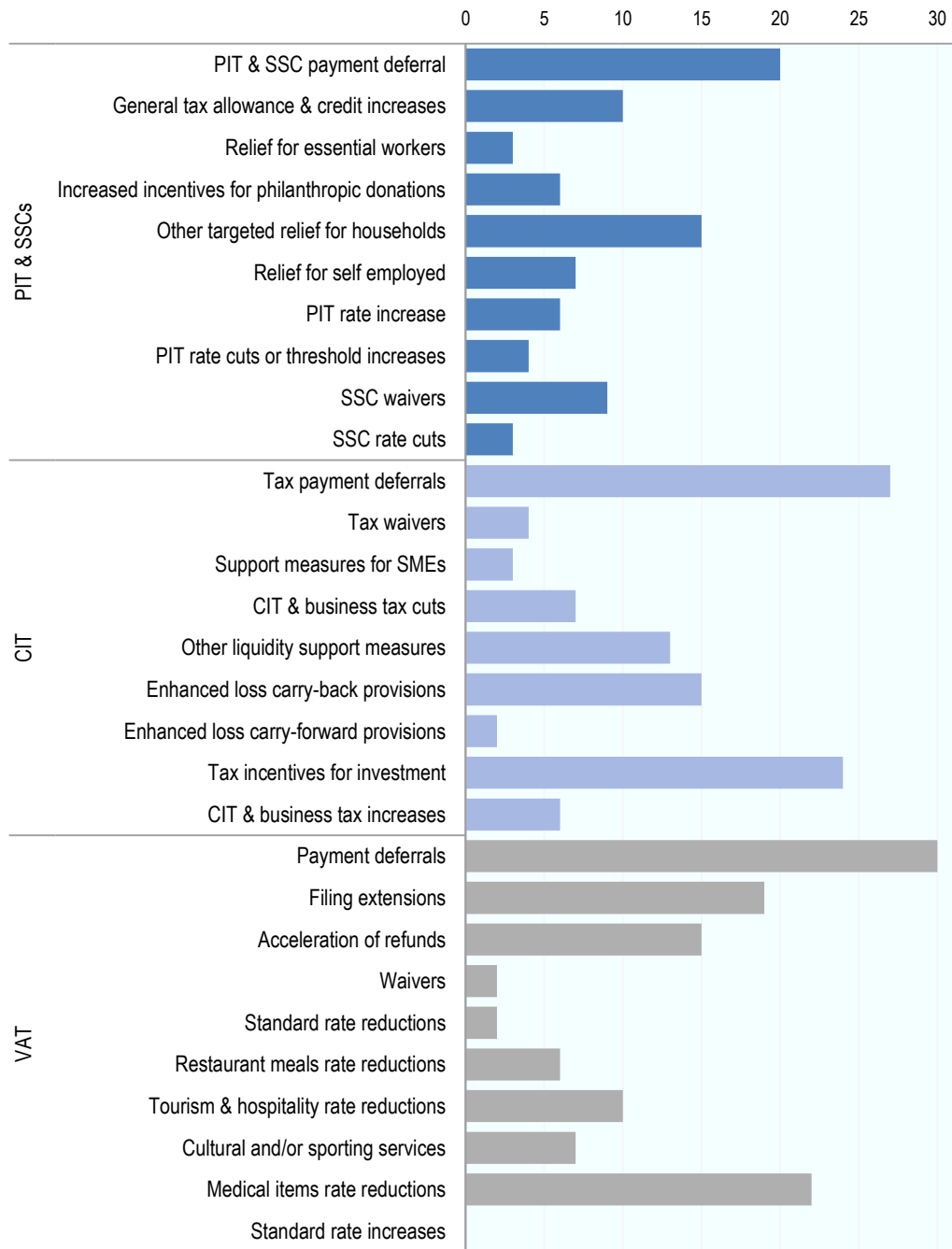
Temporary changes to VAT rates were also widely seen across the OECD, either targeted toward the hospitality industry, restaurant services and cultural and sports sectors, or applying more generally. Many reductions were initially limited to a period of three to six months. Germany and Ireland reduced their standard VAT rates for six months: from 19% to 16% until the end of 2020 in Germany and from 23% to 21% until the end of February 2021 in Ireland. In both countries, this contributed to a fall in VAT revenues in nominal terms and a share of GDP. In Germany, reduced VAT rates were also lowered. Similarly, Norway also lowered their reduced VAT rates in response to the crisis. Over half of all OECD countries introduced temporary zero or reduced rates for medical equipment and personal protective equipment.<sup>3</sup> No OECD countries increased their standard VAT rate in 2020 (OECD, 2021<sup>[8]</sup>; OECD, 2020<sup>[11]</sup>).

In addition, all OECD countries have now adopted the rules and mechanisms recommended by the OECD's International VAT/GST Guidelines to ensure the effective taxation of cross-border supplies of services and intangibles. These rules and mechanisms are particularly relevant given the large increase in the volume of online sales by offshore vendors, made directly to consumers or through the intervention of digital platforms that was seen in 2020. The trend towards levying VAT on imports of low-value goods has continued and a growing number of countries are removing their VAT relief regimes for imports of low-value goods in light of the rapid growth in the volume of such imports (OECD, 2021<sup>[8]</sup>).



**Figure 2.3. Main PIT, SSC, CIT and VAT/GST measures in response to COVID-19**

Number of OECD countries reporting each type of measure



Note: Figure includes 37 OECD countries.

Source: OECD Tax Policy Reforms (OECD, 2021) and authors' calculations.

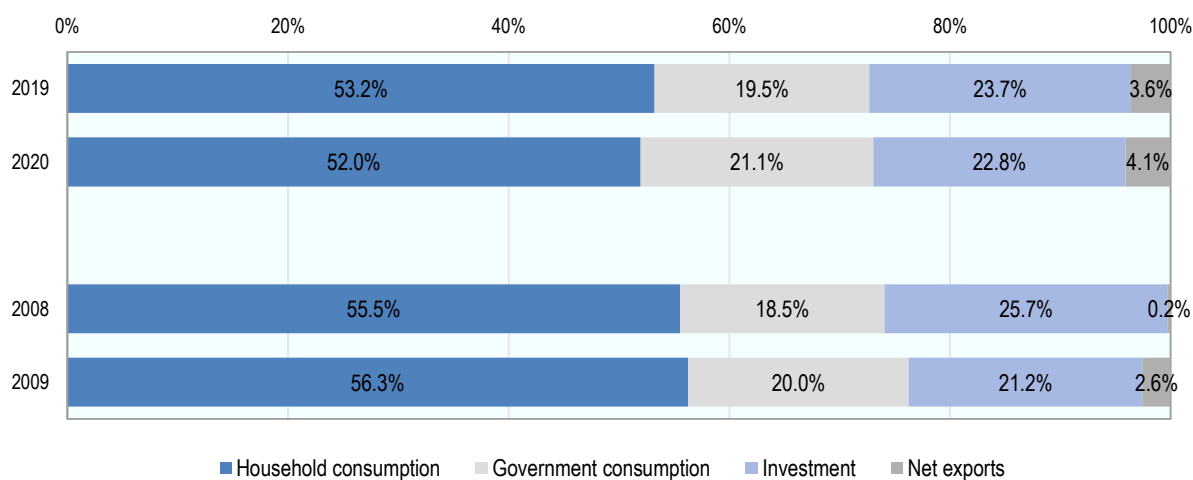
COVID-19 also had a dramatic impact on the level and composition of consumption in the economy:

- Household consumption, particularly of luxury goods, was dramatically affected by the lockdowns and other restrictions designed to curb the spread of COVID-19, with sharp downturns in quarter two of 2020 in almost all OECD economies. Total final consumption fell by an average of 1.9% in nominal terms across the 33 countries for which these data are available, although this was lower than the unweighted average fall in nominal GDP across this group (2.3%), resulting in a slight increase in consumption as a share of GDP. However, the fall in the final consumption of households was considerably more steep (4.8%), offset by an increase in government consumption of 6.1%. These changes were more pronounced than those seen in the GFC, where total consumption fell by an average of 0.1% (compared to a nominal (unweighted) GDP decrease of 3.3%), with a fall in household consumption of 1.6% and a smaller rise in government consumption, of 4.3%.
- The composition of household consumption changed markedly in 2020. In the ten countries for which data are available, the share of household consumption expenditure on necessity goods<sup>4</sup> increased by 0.7 p.p. in 2020, from 8.5% to 9.2%, while the share of consumption on luxury goods<sup>5</sup> fell by 3.1 p.p. from 63.0% to 59.9%. In 2009,<sup>6</sup> the share of necessities barely changed (10.5%) and the share of luxury goods decreasing by 1.0 p.p. (63.7% to 62.7%).
- Household savings rates saw a sharp increase across OECD countries in 2020, which was considerably more pronounced than that of the GFC (OECD, 2020<sub>[12]</sub>). This put downward pressure on household consumption in most countries and contributed to falls in GDP.

The COVID-19 crisis led to a shift in the composition of GDP in 2020. Measured under the expenditure approach, the OECD average shares of household expenditure and investment in GDP fell between 2019 and 2020, while the shares of government expenditure and of net exports rose (Figure 2.4).<sup>7</sup>

**Figure 2.4. Composition of GDP (expenditure approach), 2008-2009, 2019-2020**

Average shares across OECD countries



Note: Data for 2020 are the average of 33 OECD countries for which these data were available.

Source: OECD National Accounts and authors' calculations.

StatLink  <https://stat.link/z34n1h>

## **Changes in revenues from different tax types, 2019-2020**

This section provides an overview of revenue changes by tax type between 2019 and 2020, both as a share of GDP and in nominal terms. Box 2.2 provides more information on the tax types considered.

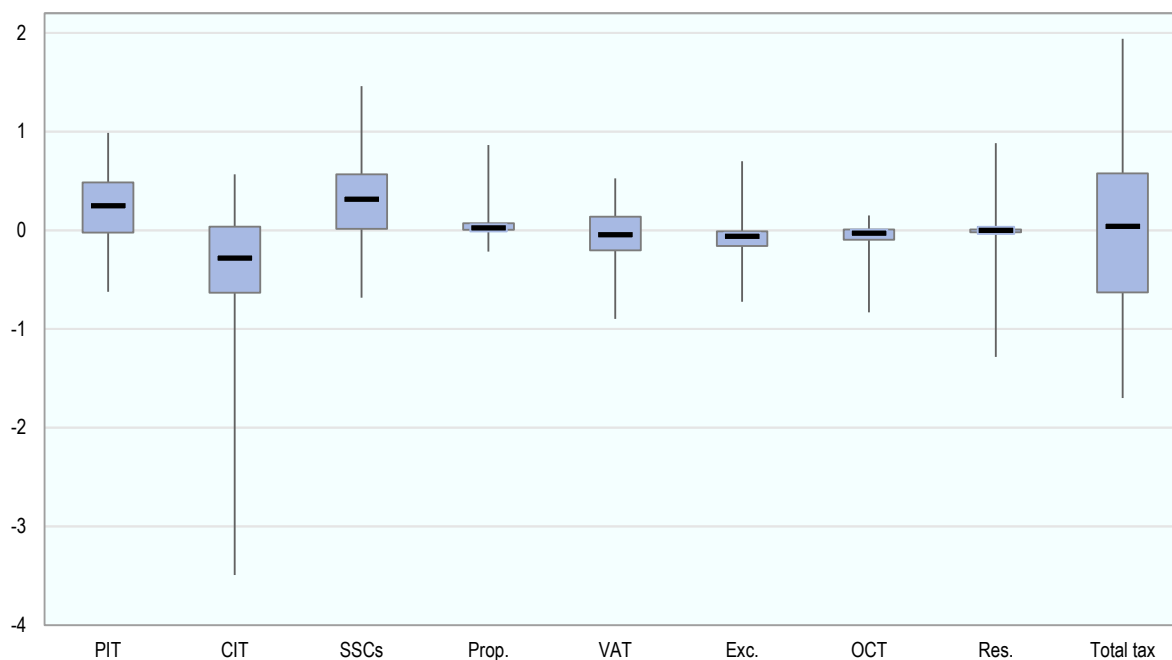
### *Changes in revenues by tax type as a share of GDP*

Between 2019 and 2020, direct taxes on income were more strongly affected than indirect or property taxes. In 2020, the largest increases in revenues as a share of GDP were seen in PIT and SSCs, which both increased on average by 0.3 percentage points. The largest fall was seen in CIT, which decreased by 0.4 p.p., on average (Figure 2.5). No change was seen in property taxes or VAT as a share of GDP, on average, and a smaller decrease (of 0.1 p.p.) was seen for excise revenues.

For PIT and SSCs, the overall distribution of the increases was similar across OECD countries (Figure 2.5), with an average increase of 0.3 p.p. for both tax categories:


- Approximately one-quarter (9) of OECD countries saw decreases in PIT revenues as a share of GDP, half (18) of OECD countries saw increases of between 0 and 0.5 p.p. (PIT) and the remaining quarter (10 countries) had increases above this level. The country that saw the largest drop in PIT was Turkey, due to tax cuts and deferrals related to COVID-19,<sup>8</sup> as well as a decrease in employment and in total personal income. Decreases were also seen in Austria and Latvia (0.4 p.p. in both cases). In Austria, this was due to a combination of economic factors and a decrease in wage and capital incomes related to COVID-19, as well as the impact of several policy measures to support households in the pandemic. In Latvia, the change was due in part to lower wage growth and job losses (Central Statistical Bureau of Latvia, 2021<sub>[13]</sub>) as well as COVID-19 response measures. The country that saw the largest increase was Denmark, where the increase was largely due to the distribution of holiday pay accrued between 1 September 2019 and 31 August 2020, previously only accessible when leaving the Danish labour market (e.g. by retirement or leaving the country) (Lønmodtagernes Feriemidler, n.d.<sub>[14]</sub>). This distribution was implemented as a COVID-19 measure and was taxed as personal income when received. In addition, personal incomes in Denmark were heavily supported through a temporary wage compensation scheme.
- Seven OECD countries saw decreases in SSC revenues as a share of GDP, while 29 countries saw increases, 13 of which were greater than 0.5 p.p. The largest decrease in SSCs was of 0.7 p.p., in Hungary following a decrease in the employer social security rates in July 2020 as well as waivers of SSC rates related to COVID-19 (OECD, 2021<sub>[8]</sub>; OECD, 2021<sub>[9]</sub>).<sup>9</sup> The largest increase was seen in Spain (1.5 p.p.), although this was due to a much sharper fall in nominal GDP (9.9%, the largest contraction across the OECD) than in SSC revenues (4.8%).

Figure 2.5. Changes in tax revenues by category as a share of GDP, 2019-2020



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. In the figure, the lowest point represents the minimum country change for the tax type between 2019-2020; the box represents the changes for countries between the lower and upper quartiles (i.e. 50% of OECD countries had changes within the range shown by each box); and the upper point for each tax type represents the maximum country change. The line in each box represents the median country change (i.e. half of OECD countries were both above and below this line).

Source: *Revenue Statistics 2021* and authors' calculations.

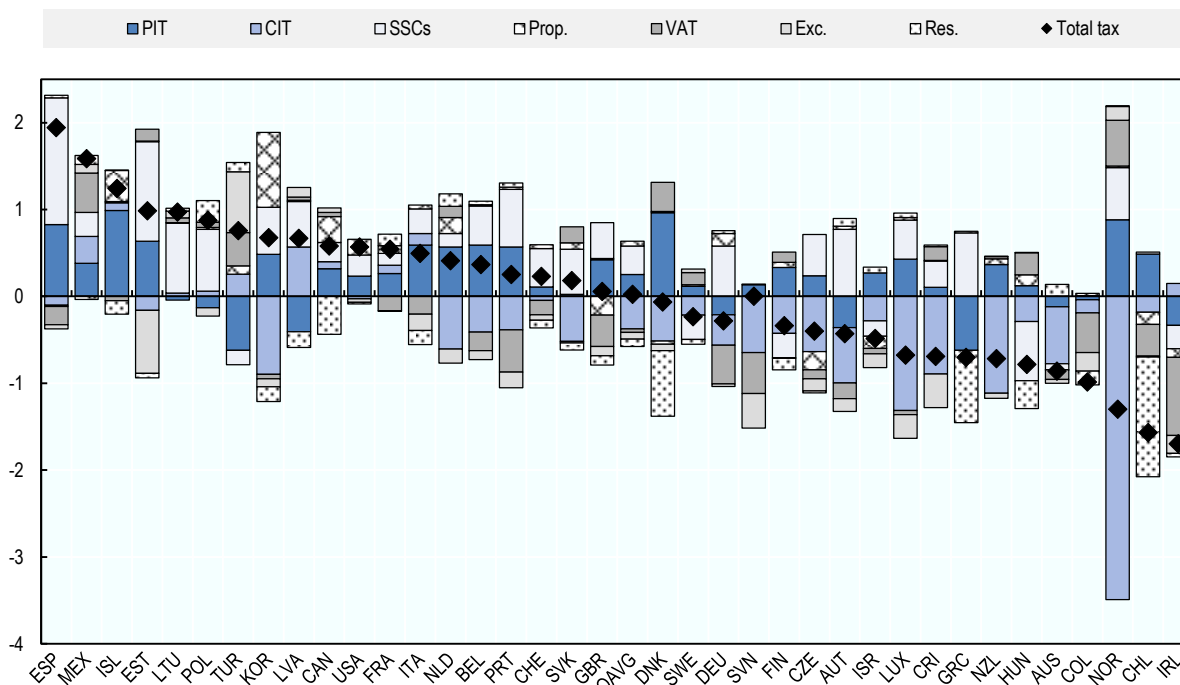
StatLink  <https://stat.link/nsud9v>

Corporate income taxes fell widely across the OECD countries in 2020, with an average fall of 0.37 p.p. and falls in 26 countries. The largest decrease was seen in Norway (3.5 p.p.), due to temporary changes in the petroleum tax act to help oil and gas companies execute planned investments as well as the opportunity to offset losses in 2020 against taxed surpluses from the previous two years. The Czech Republic also experienced a decrease of over 1 p.p. (1.3) due to COVID-19 and a range of business tax incentives including loss carry-back and accelerated depreciation of selected assets. Thirteen countries saw increases in CIT revenues in 2020 relative to 2019: the largest increase was seen in Latvia, due to tax revenues recovering after a high level of repayments of advance payments in 2019, following the introduction of the new corporate tax regime in 2018.

No change was observed in the average share of property tax revenues to GDP in 2020 relative to 2019 (a very small increase, of 0.05 p.p. of GDP). Twenty-nine OECD countries saw increases in the share of property tax revenues, with 18 of these between 0 and 0.7 p.p. The largest increase was seen in Korea (0.9 p.p.) due to higher revenues from security transaction taxes following an increase in transaction volumes. Of the nine OECD countries where property tax revenues fell as a share of GDP, the largest falls (0.2 p.p.) were seen in the Czech Republic and the United Kingdom, due to the abolition of the real property transfer tax from December 2019 in the Czech Republic and due to increases in the rate reliefs applied to non-domestic property taxes in the United Kingdom in response to COVID-19.


**Figure 2.6. Decomposition of change in tax-to-GDP ratio by tax category, 2019-2020**

Year-on-year change, p.p.



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. This graph includes the change between years 2018 and 2019 for Australia and New Zealand, as both countries report tax revenues on a fiscal year basis that includes Q2 of 2020 in the 2019 fiscal year. Due to data availability, the average excludes Japan for SSCs (category 2000) and for total tax revenues; it also excludes Greece for PIT (category 1100), CIT (category 1200), VAT (category 5111) and excises (5111) due to disaggregated data for these categories not being available.

Source: *Revenue Statistics 2021* and authors' calculations.

StatLink  <https://stat.link/zegi46>

Similarly, no change was observed in the average share of VAT to GDP in 2020 (a very small decrease of 0.04 p.p.). VAT revenues decreased as a share of GDP in 19 countries and increased in the other 17 countries that apply a VAT; with half of these changes situated between -0.2 and +0.1 p.p. of GDP. The largest fall was seen in Ireland (0.9 p.p.) due to the temporary VAT rate cut during the COVID-19 pandemic as well as a decrease in economic activity. The largest increase was seen in Norway, at 0.5 p.p. .

Revenues from excise taxes decreased slightly as a share of GDP on average, in 2020 and this tax category saw the most widespread falls in revenues of all tax types, with falls in 28 countries. Most decreases were caused by falls in fuel excises due to COVID-19-related mobility restrictions and lockdowns. The largest fall was seen in Estonia (-0.7 p.p.) in part due to the closure of the Latvian-Estonian border as well as a temporary reduction in the tax rate on natural gas used as propellant (OECD, 2021<sup>[8]</sup>) and the largest increase was seen in Turkey (0.7 p.p.), due to increases in the sales of motor vehicles and durable goods in the second half of 2020. Other than in Estonia and Turkey, the range of changes across countries was comparatively small, reflecting in part the smaller size of excises as a share of total tax revenues. No other changes in excise revenues exceeded 0.5 p.p. of GDP in 2020.

## Box 2.2. Tax types considered and country assumptions

### Tax types considered in the analysis

This chapter considers changes in both total tax revenues and several individual categories of tax revenues of particular size or policy significance. These taxes include:

**Table 2.2. Individual tax types used in this chapter**

Detailed tax types	Acronym	Corresponding <i>Revenue Statistics</i> codes
Personal income tax	PIT	1100 Personal income tax
Corporate income tax	CIT	1200 Corporate income tax
Social security contributions & payroll taxes	SSC	2000 Social security contributions; 3000 Payroll taxes
Property taxes	Prop.	4000 Taxes on property
Value-added taxes	VAT	5111 Value-added taxes
Excises	Exc.	5121 Excises
Other consumption taxes	OCT	All other taxes under 5000 (5112, 5113, 5122, 5123, 5124, 5125, 5126, 5127, 5128, 5200, 5300)
Residual	Res.	1300 Unallocable between 1100 and 1200; 6000 Other taxes

Information is presented for two different indicators: tax revenues in nominal currency and tax revenues as a share of GDP. The GDP data that is used for each country is the same as shown in Table 3.19 of the publication, except for adjustments related to the assumptions about fiscal years noted below. The years included in this chapter are from 1995–2020, which are available for all OECD countries.

The averages shown in this chapter are unweighted. For the reasons detailed below, they may differ from the other averages for 2020 presented elsewhere in the report.

### Assumptions specific to individual countries

All OECD countries other than Australia, Japan and New Zealand provide data on a calendar year basis. In Australia and New Zealand, the fiscal year runs from 1 July of the current year to 30 June of the following year; whereas in Japan the fiscal year runs from 1 April in the current year to 31 March in the following year. The second quarter of 2020 occurred in fiscal year 2019 for Australia and New Zealand and in the year 2020 for all other countries, including Japan. In this chapter, the changes shown for Australia and New Zealand are from the 2018 to 2019 fiscal years.

In a few countries, preliminary data for the year 2020 was only partially available at the time this publication was prepared. These data include:

- Social security contributions in Japan: in this chapter, data is not presented for Japan for SSCs (category 2000) or for total tax revenues and Japan is not included in the averages for these two items. Data for Japan is included in the averages for all other tax types.
- A breakdown of income tax revenues (between PIT revenues (category 1100) and CIT revenues (category 1200) and of taxes on goods and services (including VAT (category 5111) and excises (category 5121)) in Greece: in this chapter, data is shown for all income taxes (category 1000) and all taxes on goods and services (category 5000). Greece is not included in the averages for PIT, CIT, VAT or excises.

Tax revenue data are available for most OECD countries on an accrual basis, except for Chile, Colombia, Costa Rica, Israel, Korea, Mexico and Turkey, which report on a cash basis. Personal income tax information in Canada is also reported on a cash basis. In addition, the preliminary 2020 data for Hungary are also on a cash basis while the final data for the years up to and including 2019 are on an accrual basis. More information is available in table 2A in the Annex to this chapter and in the detailed country tables in chapter 5 of the publication.

### Changes in nominal tax revenues by tax type

In nominal terms, PIT and SSC revenues increased on average and country changes in these tax types were only weakly correlated with changes in nominal GDP (Table 2.3).<sup>10</sup> This suggests either that the tax base was relatively stable in light of broader GDP fluctuations, or that policy changes limited the impact of economic changes on revenues from these tax bases (e.g. by stabilising the base, or increasing the effective tax rate). Seventeen OECD countries saw increases in nominal PIT revenues and 20 saw increases in SSCs in nominal terms. Further, in many countries where these revenues fell in nominal terms, they did so more slowly than GDP.

Nominal revenues from VAT, which were relatively stable as a share of GDP, decreased slightly in nominal terms (2.6%) on average, lower than the average fall in nominal GDP. Twenty-four OECD countries saw decreases in nominal VAT revenues in 2020. Country changes in VAT revenues were more closely correlated to changes in GDP, contributing to their relative stability as a share of GDP on average; whereas changes in property taxes were very weakly correlated with GDP (Table 2.3).

Nominal revenues from excise taxes and CIT were the most affected on average and in terms of the number of countries affected. Nominal excise tax revenues fell by 5.4% on average, with 31 countries experiencing falls, whereas CIT revenues fell by 12.1%, with 30 countries experiencing falls. Changes in nominal excise tax revenues across OECD countries were the most closely correlated with GDP changes, primarily due to drops in fuel excise revenues due to COVID-19-related restrictions on mobility. By contrast, while CIT revenues faced the largest nominal falls across OECD countries, the changes in CIT revenues and in GDP in each country were not strongly correlated. All but two countries with falls in nominal GDP also saw falls in nominal CIT revenues that were generally larger than the fall in nominal GDP. Nominal CIT revenues also decreased in seven of the 11 OECD countries which saw increases in nominal GDP.

**Table 2.3. Distribution of nominal revenue changes by tax category and of GDP**

	2019-2020					2008-2009				
	Mean	Lower quartile	Median	Upper quartile	Correlation with GDP	Mean	Lower quartile	Median	Upper quartile	Correlation with GDP
PIT	1.4	-1.9	-0.4	3.5	29.0	-5.0	-7.9	-5.6	-0.6	66.6
CIT	-12.1	-20.0	-13.0	-2.5	44.5	-18.7	-30.1	-17.7	-8.1	54.0
SSC	2.0	-2.1	0.9	3.9	42.7	0.8	-3.6	0.9	5.1	41.3
Prop.	0.0	-4.1	-1.2	3.1	41.9	-3.0	-8.3	-1.8	0.5	5.5
VAT	-2.6	-8.3	-2.0	0.2	71.6	-6.1	-10.8	-4.3	0.7	45.3
Exc.	-5.4	-9.8	-5.9	-1.3	73.9	1.6	-4.0	0.3	4.1	-0.2
Total Tax	-2.1	-4.6	-2.1	-0.4	78.4	-5.3	-7.2	-4.4	-2.4	64.3
GDP	-2.1	-4.7	-2.7	0.3	-	-2.7	-4.3	-2.4	-0.1	-

Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details.

The correlation for CIT revenues and GDP in 2020 excludes Latvia, which saw a significant increase in CIT revenues in nominal terms (346.4% due to the correction following abnormally high repayments in 2019, see the discussion above for more information) and the relatively low share of CIT to GDP in Latvia (0.2% in 2019 and 0.7% in 2020). If Latvia were included in the correlation for nominal CIT revenues in 2020, it would be 4.7%.

Source: *Revenue Statistics 2021* and authors' calculations.

Although this edition does not calculate estimates of tax buoyancy, the changes in tax revenues between 2019 and 2020 are prima facie consistent with findings in the tax buoyancy literature that CIT revenues are the most responsive to economic change (see Box 2.3), while PIT, SSCs and property taxes are less buoyant. However, the results for 2020 are less consistent with the finding in several studies that tax responses to changes in GDP are more pronounced in times of economic contraction.



### Box 2.3. Tax buoyancy and the relationship between changes in taxes and GDP during crises

Tax buoyancy measures the overall changes in tax revenues with respect to changes in GDP:  $Tax\ Buoyancy = \% \Delta Tax\ Revenue \div \% \Delta GDP$ . A tax buoyancy of one implies that a one percent change in GDP (would lead to a tax revenue change of one percent, resulting in an unchanged tax-to-GDP ratio, while a buoyancy larger than one would imply a larger change in tax revenue and a buoyancy smaller than one would imply a smaller change in tax revenue. The measure includes changes in tax revenue levels driven both by changes in the economy and by policy decisions.<sup>11</sup> Long-run buoyancy is important to understand the impact of economic growth on long-term fiscal sustainability, whereas short-run buoyancy indicates the cyclical variability of tax revenue and is closely related to the stabilisation function of fiscal policy (Belinga et al., 2014).

Many studies have estimated short-run and long-run tax buoyancies in advanced and developing economies, both for total tax revenues and for different tax types:

- (Beling et al., 2014<sub>[16]</sub>) develops an error correction model to estimate jointly the short-run and long-run tax buoyancies in 34 OECD countries between 1965 and 2012. The model includes lags of the dependent variable (tax revenue) and of the independent variable (GDP). The study finds that short-run tax buoyancy does not significantly differ from one in most of these countries, while long-run buoyancy exceeds one in about half of the OECD countries. Corporate taxes (CIT) are the most buoyant and thus the most responsive to changes in GDP, while excises and property taxes are the least buoyant. Tax buoyancies for personal income taxes (PIT) and social security contributions (SSC) were found to have declined over time and become less than one. Finally, the paper finds that short-run buoyancy for total tax revenue is larger during economic contractions than during growth. This result suggests that tax systems in average OECD countries seem to work better as automatic stabilizer during recessions.
- (Dudine and Jalles, 2017<sub>[17]</sub>) uses an unrestricted error correction ARDL model with a lag of one year for both tax revenues and GDP and examines data from 107 countries, including 31 advanced economies, 38 emerging market economies and 38 low income countries, between 1980 and 2014. This study finds that short-run buoyancy is not statistically different from one in advanced economies, while it is generally larger than one in emerging markets and low income countries. On average, the study finds that long-run buoyancy of total tax revenue is not different from one across all country groups. By type of tax, the study notes that long-run buoyancy exceeds one for CIT in advanced economies, for PIT and SSC in emerging markets and for taxes on goods and services in low income countries. Contrary to the previous finding, this paper concludes that short-run buoyancy is generally smaller during economic contractions than economic expansions and only CIT (for all groups) and taxes on goods and services (for emerging markets) show larger buoyancy during contractions.
- (Deli et al., 2018<sub>[18]</sub>) uses an error correction ARDL model to estimate short-run and long-run tax buoyancies for a panel of 25 advanced OECD countries between 1965 and 2015. This study finds that both short-run and long-run tax buoyancies do not differ from one for total tax revenue, exceed one for CIT and are less than one for PIT. The study finds that short-run buoyancies for total tax, PIT and CIT are larger than one during economic contractions. In addition, all short-run buoyancies are larger during economic contractions than during economic expansions.



- A more recent study from (Lagravinese, Liberati and Sacchi, 2020<sup>[19]</sup>) looks at data from 35 OECD countries over the period 1995-2016 and estimates short-run and long-run tax buoyancies through a one-stage Error Correction Model. This paper used a different methodology from earlier studies and finds that both short-run and long-run tax buoyancies are consistently lower than one, a result which differs from the others.

This paper does not estimate tax buoyancies across OECD countries, although this could be a useful direction for future research once more final data for 2020 is available (see Box 2.1). However, it presents simple correlations of annual changes in nominal tax revenues and in nominal GDP across OECD countries to provide insights into the changes observed in the OECD average tax-to-GDP ratio for total tax revenues and different tax types in between 2019-2020 and between 2008-2009.

## Comparison with changes in tax types during the global financial crisis

### *Difference in nominal changes and in tax types as a share of GDP*

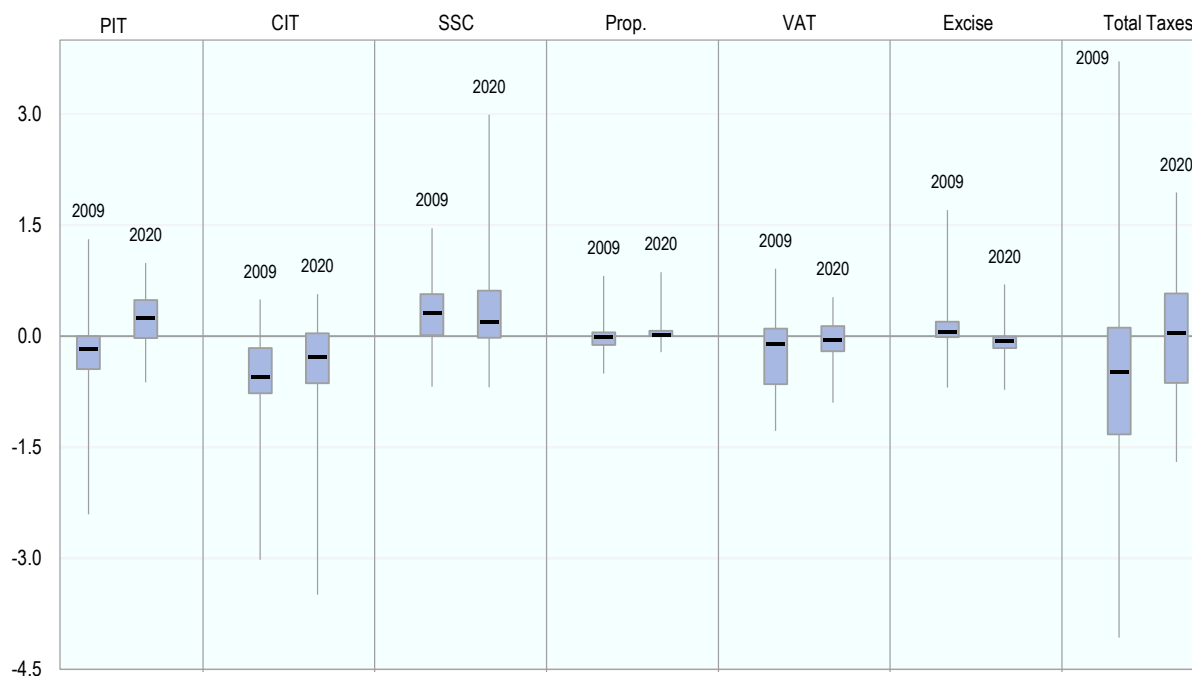
The two crises had very different initial impacts on the revenues of different tax types. Between 2008 and 2009, the average changes in nominal tax revenues from each tax type were considerably greater than in 2020 (Table 2.3). Nominal CIT and VAT revenues fell in both crises, although more significantly in the GFC; PIT and property tax revenues fell in 2009 but increased on average in 2020; SSCs increased in both crises, although by less on average in 2009 than in 2020; and excise revenues rose in 2009 but fell in 2020. Taken together, the more limited scale of the falls in CIT and VAT and the increases in PIT, SSCs and property taxes, meant that total nominal tax revenues between 2019 and 2020 fell by less than half of what was experienced between 2008 and 2009.

The correlation between GDP and revenues from the different tax types also differed in the two periods (Table 2.3). Changes in income taxes (both personal and corporate) were much less closely correlated with changes in GDP in 2020 than in 2009, suggesting that the income tax base was more stable during the COVID-19 crisis than the GFC. By contrast, changes in indirect taxes were much more closely correlated with GDP in 2020 than in 2009. In the GFC, VAT fell by more in nominal terms, often exceeding falls in GDP, whereas in 2020, VAT changes were broadly similar to changes in GDP. In 2009, changes in excises were not correlated with GDP changes, reflecting the inelastic nature of many goods subject to excises (notably fuel and tobacco), whereas they were the most closely correlated tax type in 2020, reflecting the specificities of the COVID-19 crisis and its limits on mobility. Changes in SSCs were roughly as equally correlated with GDP changes in both periods. The marked differences in the correlation of PIT, VAT, excises and property taxes has implications for tax policymakers' understanding of how these taxes behave in economic downturns, as well as the impact of support measures in stabilising revenues.

As a result, changes in each tax type as a share of GDP differed substantially between 2020 and 2009 (Figure 2.7). Personal income taxes rose in three-quarters of OECD countries in 2020, whereas the opposite occurred in 2009. Excises similarly reversed their trend in 2020, when they fell in most countries, compared to a general increase in 2009. Changes in VAT revenues also differed: while they declined in most countries in 2009, there was no change on average in 2020, with a roughly equal distribution of increases and decreases. Corporate income tax and SSC revenues experienced a similar scale of change in both crises, with the former falling and the latter rising.


**Figure 2.7. Distribution of changes in tax types**

Changes as p.p. of GDP, from lowest to highest: minimum, lower quartile, median, upper quartile, maximum



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. In the figure, the lowest point represents the minimum country change for the tax type between 2019-2020; the box represents the changes for countries between the lower and upper quartiles (i.e. 50% of OECD countries had changes within the range shown by each box); and the upper point for each tax type represents the maximum country change. The line in each box represents the median country change (i.e. half of OECD countries were both above and below this line).

Source: *Revenue Statistics 2021* and authors' calculations.

StatLink  <https://stat.link/3ohky6>

### **Discussion on differences between the COVID-19 crisis and the GFC**

The differences between the tax revenue changes in the GFC and the COVID-19 crisis arise from the differences noted earlier between the nature of the two crises, including the shorter and sharper nature of the COVID-19 shock, its more strongly sectoral nature and its relatively disproportionate impact on households at lower income levels.

As noted, PIT and SSC revenues rose in 2020 in the majority of OECD countries as a share of GDP (28 and 29 countries respectively). This differs from the GFC, where PIT revenues fell as a share of GDP in 28 OECD countries. This may be due to a number of key differences between the two crises:

- **More restricted falls in employment in 2020 relative to 2009:** although employment rates dropped sharply in the second quarter of 2020, the overall loss of employment was greater in 2009 (relative to 2008) than in 2020 (relative to 2019). This is likely linked to the shorter nature of the initial shock in 2020, as discussed above, and to the impact of the use of job retention schemes, which were found to be effective in protecting employment. Job retention support was used in respect of around 20% of employment across the OECD in April 2020, supporting approximately 60 million jobs, more than ten times as many as during the GFC.<sup>12</sup> In 2020, the OECD average unemployment rate fell quickly after reaching a peak of 8.6% in the second quarter and was below

7.0% by the end of the year. By contrast, unemployment was more persistent during the GFC and remained above 8.0% throughout most of 2009 and all of 2010 (OECD, 2021<sub>[20]</sub>).

- **Difference in composition of job losses:** Employment reductions in 2020 were concentrated at the lower end of the income distribution, as were falls in working hours. As taxpayers at lower levels of income pay a lower level of taxation in almost all OECD countries due to the progressive nature of tax systems, this limited the impact of the COVID-19 crisis on revenues relative to the GFC, in which job losses and reductions in working hours were more evenly spread (OECD, 2021<sub>[10]</sub>). Similarly, job losses in 2020 were more concentrated by sector than in 2009. Finally, increases in tax rates on higher income earners in some countries may have reduced the overall decline in PIT revenues.
- **More limited falls in labour compensation:** Labour compensation (i.e. total wages and salaries) fell in both crises, but did so by more in the GFC. On average, labour compensation decreased by 3.14% in 2009 and 0.54% in 2020. In both crises, labour compensation decreased by less than the decline in GDP leading to an increase in the share of labour compensation to GDP, which was more pronounced in 2020 than in 2009 (+1.3 p.p. compared to +0.9 p.p.), increasing the tax base relative to GDP (OECD, 2021).

Corporate income tax revenues decreased in both crises, although to a slightly greater extent in 2009 than in 2020. Although many of the support measures (described above) reduced tax revenues, CIT revenues may have been partially protected by a lower level of corporate bankruptcies. (OECD, 2021<sub>[2]</sub>) notes that corporate bankruptcies were lower in 2020 than in preceding years, in part as a result of support measures and restrictions on creditors and banks from enforcing foreclosures, as well as the sharper and more sectoral nature of the declines in economic activity. Net operating surplus, a proxy for business profit, was more negatively affected in the GFC than in 2020. For the 19 OECD countries where 2020 data are available, the nominal growth rate of net operating surplus and mixed income was -7.8% in 2009 and -5.5% in 2020 (OECD, 2021). Finally, while the GDP impacts of the GFC were seen in 2009, the downturn in the economy and in revenues had already started in the fourth quarter of 2008, which meant that tax returns for 2009 may have already incorporated losses from the year before, further reducing profits. By comparison, the impacts of the COVID-19 crisis were felt initially in most countries in quarter two of 2020, which may have reduced losses in the first calendar year of the crisis.

The differences between the changes in VAT revenues in both crises are less easily understood than those seen for PIT. Despite the common use of VAT support measures and the changes in private consumption, which exceeded those of 2008-2009 (Simon and Harding, 2020<sub>[21]</sub>), VAT revenues did not see widespread declines in 2020. In nominal terms, VAT revenues decreased by an average of 2.3%, with falls seen in 24 OECD countries. As a share of GDP, they decreased by an average of 0.03 p.p., with falls in 19 OECD countries. Changes in VAT revenues were relatively correlated with changes in GDP in 2020, resulting in a relatively small and even spread of changes around zero as a share of GDP. The limited nature of the changes in VAT as a share of GDP in 2020 differ markedly from the changes in the GFC (Figure 2.7), where VAT declined in 23 countries, with an average decrease of 0.2 p.p. Nominal changes in VAT revenues were also much more strongly correlated with changes in GDP in 2020, leading to a more neutral impact on VAT revenues as a share of GDP. In 2020, VAT changes had a correlation ratio of 71.6%, compared to 45.3% in 2009.

Possible contributing factors to the limited falls in VAT include:

- **Lower levels of corporate bankruptcies:** As VAT is collected and remitted by businesses, the impact of the crisis on business solvency can have a significant effect on VAT revenues. VAT revenue losses from bankruptcy and business insolvencies can represent an important share of a country's VAT gap. A study by the European Commission noted that in the United Kingdom, payment difficulties arising from bankruptcy and financial insolvency accounted for one-fifth of the total compliance gap in 2010 and that in Australia, up to one-third of the compliance gap between

2009-10 was attributable to debt, compared to 15% in earlier years (European Commission, 2012<sup>[22]</sup>). The lower level of corporate bankruptcies in 2020 than in the GFC, as discussed earlier, is likely to have reduced losses from unremitted VAT due to business bankruptcies.

- **Increase in government consumption:** Although the overall share of consumption in GDP rose in 2020, it did so by less than it did in 2009; and the increase was primarily due to a larger rise in government consumption that offset a fall in household consumption. While government expenditure is exempt from VAT in all but one OECD country (New Zealand), governments effectively pay input VAT on most of their purchases. If government consumption increased more via the purchases of inputs subject to full VAT rates, rather than on government wages or on services or goods taxed at zero or reduced rates, the increase in government expenditure could lead to a rise in VAT revenue relative to GDP. An increase in intermediate consumption by VAT exempt entities, including in the healthcare sector, would have the same effect.
- **Onset of crisis part-way through the year:** The COVID-19 crisis may not have as dramatically affected annual revenues in 2020 as the GFC did in 2009, given that it primarily affected consumption in quarter two, with more limited impacts in quarters three and four. This differs from the GFC, where GDP falls were consistent in each quarter of the year, leading to larger overall changes in business profits and VAT receipts.
- **Nature of reporting:** Where data are reported on an accrual basis rather than on the basis of cash receipts of VAT due, early accrual-based reports may include a possibly significant amount of VAT that will not be remitted by businesses to the tax authorities. The deferrals of VAT payments adopted by many countries in the crisis may conceal some VAT revenues that will not be remitted in the future, with the impact in 2020 being more pronounced given the greater use of deferrals relative to the GFC. Similarly, few countries have relaxed their “bad debt relief” regimes to allow businesses to write off the output-VAT due on invoices that remain unpaid during the crisis. This means that businesses may have declared VAT on unpaid invoices in their VAT return that they will subsequently claim back upon completion of the normal bad debt relief regime. This may also contribute to artificially increasing reported VAT revenues in the short-term.

Finally, another key difference between the GFC and the current crisis are the changes seen in excise duties, which increased slightly in most countries in 2009, but decreased in most in 2020. The changes in excises were predominantly related to the unprecedented restrictions in mobility during the lockdowns associated with the COVID-19 pandemic, resulting in lower revenues from road and aviation excise taxes. Border closures also reduced trade in some countries.

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## Annex 2.A. Changes in tax-to-GDP ratios by country and tax type

Annex Table 2.A.1. Changes in tax-to-GDP ratios, 2019-2020, by tax type

Year-on-year change, percentage points

	PIT	CIT	SSCs	Prop.	VAT	Excises	OCT	Res.	Total Taxes	Basis of reporting*
Australia	-0.1	-0.7	0.0	0.0	-0.1	0.0	0.1	-0.1	-0.9	Accrual (1998)
Austria	-0.4	-0.6	0.7	0.0	-0.2	-0.1	0.1	0.0	-0.4	Accrual
Belgium	0.6	-0.4	0.5	0.0	-0.2	-0.1	0.0	0.0	0.4	Accrual
Canada	0.3	0.1	0.2	0.3	0.0	0.1	-0.4	0.0	0.6	Accrual (1999)*
Chile	0.5	-0.2	0.0	-0.1	-0.4	0.0	-0.1	-1.3	-1.6	Cash
Colombia	0.0	-0.1	0.0	0.0	-0.5	-0.2	0.0	-0.1	-1.0	Cash
Costa Rica	0.1	-0.9	0.2	0.0	0.2	-0.4	-0.3	0.5	-0.7	Cash
Czech Republic	0.2	-0.6	0.5	-0.2	-0.1	-0.1	0.0	0.0	-0.4	Accrual
Denmark	1.0	-0.5	0.0	0.0	0.3	-0.1	-0.1	-0.7	-0.1	Accrual
Estonia	0.6	-0.2	1.1	0.0	0.1	-0.7	-0.1	0.0	1.0	Accrual
Finland	0.3	-0.4	-0.3	0.1	0.1	0.0	-0.1	0.0	-0.3	Accrual
France	0.3	0.1	0.0	0.1	-0.2	0.0	0.1	0.2	0.5	Accrual
Germany	-0.2	-0.3	0.6	0.1	-0.4	0.0	0.0	0.0	-0.3	Accrual (2002)
Greece	-0.6		0.7	0.0			-0.8	0.0	-0.7	Accrual (1998)
Hungary	0.1	-0.3	-0.6	0.1	0.3	0.0	-0.4	0.0	-0.8	Accrual (2002)*
Iceland	1.0	0.1	0.0	0.4	0.0	0.0	0.0	-0.1	1.2	Accrual (1998)
Ireland	-0.3	0.2	-0.2	-0.1	-0.9	-0.2	0.0	0.0	-1.7	Accrual (1998)
Israel	0.3	-0.3	-0.2	-0.1	-0.1	-0.2	0.0	0.1	-0.5	Cash
Italy	0.6	0.1	0.3	0.0	-0.2	-0.2	-0.1	-0.1	0.5	Accrual (2000)
Japan	0.1	-0.6		0.1	0.4	-0.1	0.0	0.0		Accrual
Korea	0.5	-0.9	0.5	0.9	0.0	-0.1	-0.1	-0.1	0.7	Cash
Latvia	-0.4	0.6	0.5	0.0	0.0	0.1	-0.2	0.0	0.7	Accrual
Lithuania	0.0	0.0	0.8	0.0	0.1	0.1	0.0	0.0	1.0	Accrual
Luxembourg	0.4	-1.3	0.4	0.0	0.0	-0.3	0.1	0.0	-0.7	Accrual
Mexico	0.4	0.3	0.3	0.0	0.5	0.1	0.0	0.1	1.6	Cash
Netherlands	0.6	-0.6	0.2	0.2	0.1	-0.2	0.0	0.1	0.4	Accrual (1999)
New Zealand	0.4	-1.1	0.0	0.1	0.0	-0.1	0.0	0.0	-0.7	Accrual
Norway	0.9	-3.5	0.6	0.0	0.5	0.2	0.0	0.0	-1.3	Accrual (2000)
Poland	-0.1	0.1	0.6	0.0	0.1	-0.1	-0.6	1.0	0.9	Accrual (2002)
Portugal	0.6	-0.4	0.7	0.0	-0.5	-0.2	0.0	0.1	0.3	Accrual
Slovak Republic	0.0	-0.5	0.5	0.1	0.2	0.0	-0.1	0.0	0.2	Accrual
Slovenia	0.1	-0.6	1.2	0.0	-0.5	-0.4	-0.1	0.0	-0.3	Accrual
Spain	0.8	-0.1	1.5	0.0	-0.2	0.0	0.0	0.0	1.9	Accrual (2000)
Sweden	0.1	-0.2	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.2	Accrual (2000)
Switzerland	0.1	0.0	0.4	0.0	-0.2	-0.1	0.0	-0.1	0.2	Accrual
Turkey	-0.6	0.3	-0.2	0.1	0.4	0.7	0.2	0.0	0.8	Cash*
United Kingdom	0.4	0.0	0.4	-0.2	-0.4	-0.1	-0.1	0.0	0.1	Accrual
United States	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.6	Accrual
<b>Average</b>	<b>0.3</b>	<b>-0.4</b>	<b>0.3</b>	<b>0.1</b>	<b>0.0</b>	<b>-0.1</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.1</b>	

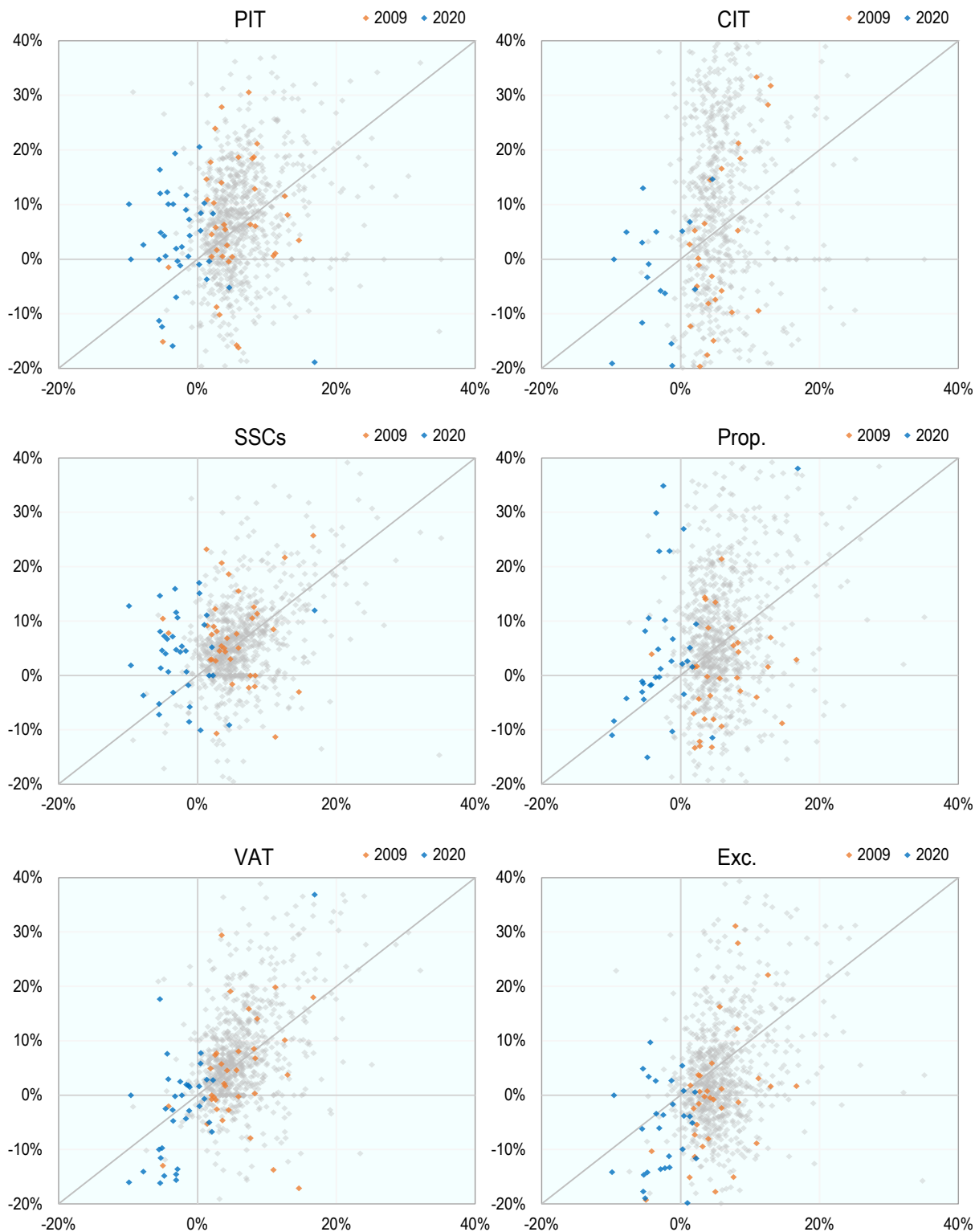
Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details. This graph includes the change between years 2018 and 2019 for Australia and New Zealand, as both countries report tax revenues on a fiscal year basis that includes Q2 of 2020 in the 2019 fiscal year. Due to data availability, the average excludes Japan for SSCs (category 2000) and for total tax revenues; it also excludes Greece for PIT (category 1100), CIT (category 1200), VAT (category 5111) and excises (5111) due to disaggregated data for these categories not being available.

\* The basis of reporting reported here is as indicated in chapter 5 under each country table. The year indicated in brackets is the year from data on an accrual basis are available if this was later than 1995. Please also note: CAN: data are on accrual basis except that personal income taxes are on a modified cash basis; HUN: preliminary data for 2020 are on a cash basis; TUR: SSCs are reported on an assessment basis.

Source: Revenue Statistics 2021 and authors' calculations.

### Annex Figure 2.A.1. Changes in tax-to-GDP ratios, 2019-2020, by tax type

Year-on-year percentage change



Note: Data for 2020 are preliminary and should be interpreted with caution; please see Box 2.1 for more details.

Source: Revenue Statistics 2021 and authors' calculations.



## Notes

<sup>1</sup> The average is a weighted average of real GDP growth figures, based on the *OECD Economic Outlook*.

<sup>2</sup> G20 economies accounted for more than 95% of total fiscal support in 2020.

<sup>3</sup> Table 2.2 of (OECD, 2021) provides a complete overview of targeted reductions and exemptions in OECD countries.

<sup>4</sup> 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.

<sup>5</sup> Private consumption excluding consumption on necessity goods and services has been used as a proxy for the expenditure on luxury goods and services.

<sup>6</sup> Data were available for 36 OECD countries over 2008-09.

<sup>7</sup> The increase in net exports was due to slightly lower average falls in exports than in imports, although imports fell by considerably less on average in 2020 than they did in 2009, meaning that the average share of net exports in GDP rose by considerably less in 2020.

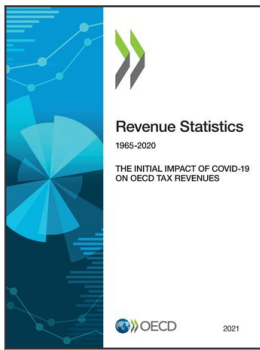
<sup>8</sup> Turkey reports revenues on a cash basis, which is likely to increase the impact of tax deferrals and other measures relative to an accruals basis. Please see Table 2A for further information.

<sup>9</sup> As Hungary reports revenues on a cash basis for the preliminary year (i.e. 2020 – please see Table 2A for further information), these figures may change in future editions of the publication once accrual data are available for 2020.

<sup>10</sup> The Annex show detailed changes in nominal revenues for each tax type and GDP in each country in 2020.

<sup>11</sup> A similar concept to tax buoyancy is called tax elasticity, which specifically measures the automatic response of tax revenue to economic changes, excluding the effects of discretionary policy changes such as legal changes in tax rates or tax base, the introduction of new taxes and administrative reforms (Mansfield, 1972).

<sup>12</sup> As noted earlier, payments under job retention schemes were also taxable in many, although not all, OECD countries, which has also contributed to protecting PIT and SSC revenues in these countries. For example, payments to employees under job retention schemes were treated as taxable in Australia, Denmark, France, New Zealand and the United Kingdom, whereas they were exempt from taxation in Germany and Sweden (OECD, 2021<sup>[9]</sup>).



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