

Global Aftermath

The Economic and Fiscal Effects of COVID in Canada and the World

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by Livio Di Matteo

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Executive Summary

The economic and fiscal disruption and associated effects of the pandemic in Canada and around the world were severe and unprecedented. The general effects of the pandemic were to disrupt health, social, governmental, and economic systems. While the impact of the pandemic on Canada and the world was similar, variations in demographics, timing of the spread and response, and other characteristics have meant that the effects on health, the response, and the economic and fiscal impacts have varied across countries.

At 103,874 total cases per million population by June 2022, Canada performed remarkably well: incidence was the fourth lowest among the IMF Advanced Economies. Moreover, of the IMF Advanced Economies, Canada was 27th out of 38 at 1,103 deaths per million population; Japan was the lowest at 248 total COVID-19 deaths per million population. Canada did not fare as well for crude COVID mortality: its rate of 1.1% is the second highest of the IMF Advanced Economies. As for responses to the pandemic, at 227 vaccinations per 100 population, Canada had the 7th highest vaccine uptake rate of the IMF Advanced Economies and the 3rd highest level of stringency in its responses to the pandemic as measured by the Oxford University's COVID-19 Government Response Tracker.

Impact on the economy

Canada's estimated real per-capita GDP growth was negative and the country ranked 29th out of 40 IMF Advanced Economies and had the second-worst performance of the G7 countries over the period from 2019 to 2022. Canada, during the first pandemic year, had the second worst employment drop of the IMF Advanced Economies at 5.1%, coming in just ahead of the United States. However, during the rebound in 2021, Canada had the second highest employment growth of the IMF Advanced Economies. Canada's unemployment rate in 2020 of 9.6% was higher than the world average (9.2%), the G7 average (6.6%), and the average for the IMF Advanced Economies (6.3%). According to the International Monetary Fund's inflation estimates for 2021, Canada was mid-ranked (19th highest) amongst the IMF advanced economies. However, a particularly high proportion of Canada's inflation appears to be linked to demand-side rather than supply-side factors. As well, Canada ranked 9th out of 30 OECD comparator countries for the size of the increase in housing prices.

Overall, Canada's performance in controlling COVID-19 incidence and vaccine uptake was good but this was accompanied by lower testing rates for COVID as well as higher crude mortality rates. In terms of economic performance, Canada did not fare well in per-capita GDP growth during the pandemic; employment growth was also low, though

this did improve in 2021. Canada was also generally mid-ranked for inflation compared to the IMF Advanced Economies, though it appears to have had a higher proportion of its inflation driven by demand-side factors. Canada's success in some aspects of dealing with COVID appears to have come at an exceptionally high price, particularly from negative short-term employment effects and weaker per-capita GDP growth.

Impact on the fiscal situation

In 2020, of 194 IMF countries, at an increase of government expenditure of 19.7%, Canada ranked 25th highest in the world for spending. This increase of nearly 20% was well above the world average of approximately 9%, the G7 average of 13%, and the average of the IMF Advanced Economies of nearly 11%. Canada also averaged a 2.2% drop in general government revenue in 2020 according to the IMF, not as severe as the average drops for either the IMF Advanced Economies or the G7.

The world saw its negative fiscal balance widen from 3.6% in 2019 to over 10% in 2020 before starting to decline to under 8% in 2021 and to just over 5% in 2022. According to the IMF, Canada initially saw a negative fiscal balance of about 11% in 2020 from a balance of close to zero in 2019. The fiscal balance for 2020 was later revised to 11.4%, with a revised forecast of 4.7% in 2021 and 2.1% in 2022.

Globally, from 2019 to 2021, the average gross debt-to-GDP ratio rose from 57% to 67%. All together 161 out of 196 countries—nearly 80%—saw an increase in their gross debt-to-GDP ratios from 2019 to 2021. Canada saw its gross debt-to-GDP ratio increase by nearly 25 percentage points from 2019 to 2021, the 15th largest increase in the world. It is worth noting that, of the increased government debt accumulated in Canada during the pandemic, much was incurred by the federal government rather than the provincial governments.

Canada's fiscal response was especially large and driven mostly by the federal response. In some respects, the ability of Canada to ramp up its fiscal response in time of need reflects its long-term prudent fiscal management and resulting low debt-to-GDP ratio achieved in the decades after the federal fiscal crisis of the 1990s. At the same time, the size of the deficit and fiscal response during the pandemic should not be allowed to become a long-term feature of the public finances given the recent rise in interest rates, especially as it limits the ability and fiscal flexibility for responses to future events.

Chapter 1

The Economic Effects of COVID-19 in Canada and the World

Introduction

The last two years in global affairs have been dominated by the continuing storm of the COVID-19 pandemic with its associated impacts on health, mortality, public finances, and the economy (Di Matteo, 2021). As of June 2022, the total number of COVID-19 cases around the world were estimated at 547.5 million with 6.336 million deaths (Mathieu *et al.*, 2022). In Canada, by the same date there had been 3.954 million cases and nearly 42,000 deaths. Indeed, these may be underestimates given that the World Health Organization (WHO) believes that the true toll when one examines excess death estimates is closer to 15 million deaths (WHO, 2022).¹

The economic and fiscal disruption and associated social impacts of the pandemic have been enormous. According to the World Bank (2022), global real GDP growth in 2020 fell 3.4% with advanced economies shrinking 4.6% and the emerging and developing economies down 1.7%. However, with the rollout of vaccines and accumulated knowledge about how to live with the virus, economies rebounded and global real GDP growth for 2021 was estimated at 5.5% and 4.1% for 2022. In April 2022, the International Monetary Fund (IMF) presented its economic projections showing world output growing 6.1% in 2021 and then slowing to 3.6% in both 2022 and 2023 (IMF, 2022a). In its October 2022 update, the IMF showed world output growing 6% in 2021 but projected only 3.2% in 2022 and 2.7% for 2023 (IMF, 2022b). The economic recovery has been accompanied by continued supply-chain disruptions, inflation, and large public-sector deficits. Ongoing COVID-19 and resurgences of other respiratory ailments combined with war in the Ukraine and a supply chain that has not fully mended continues the disruption of the world economy.

Studies on health, social, economic, and fiscal impact over the longer-term course of the pandemic are only beginning.² Razak, Shin, Naylor, and Slutsky (2022) in particular compare Canada's pandemic response to several peer countries—namely the G10—and find Canada performed better than most in terms of the percentage of the population receiving two doses of a SARS-CoV-2 vaccine, and on measures assessing the direct effect of the pandemic: number of people infected, number who died from COVID-19 and

1. According to the WHO, excess deaths or excess mortality is the difference between the number of deaths that have occurred and the number that would be expected in the absence of the pandemic based on data from earlier years. Excess mortality includes deaths associated with COVID-19 directly (due to the disease) or indirectly (due to the pandemic's impact on health systems and society).

2. Some initial studies to date include Davies, 2021; Di Matteo, 2021; and Razak, Shin, Naylor, and Slutsky, 2022.

total excess deaths. However, they note that Canada also experienced some of the most restrictive public-health measures across a broad range of domains, including restrictions on public gatherings and school closures. As well, they note that Canada's economy showed similar growth in inflation and public indebtedness, but weaker gross domestic product growth than other countries.

This chapter on the economic impact and effects of the global COVID-19 pandemic on Canada and the world begins by providing a brief overview of the pandemic's global impact and progress. Data on the pandemic is taken from *Our World in Data* (Mathieu *et al.*, 2022). It then presents an overview of assorted comparative economic indicators for the pandemic era that puts Canada's performance into international perspective, particularly in comparison to 40 Advanced Economies³ as defined by the International Monetary Fund and with available data. The economic indicators were obtained from several sources: The International Monetary Fund's World Economic Outlook data-base, and the Organisation for Economic Co-operation and Development.

3. Andorra, Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea South, Latvia, Lithuania, Luxembourg, Macao SAR, Malta, Netherlands, New Zealand, Norway, Portugal, Puerto Rico, San Marino, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, and United States (International Monetary Fund, 2022c).

Dimensions of the Pandemic

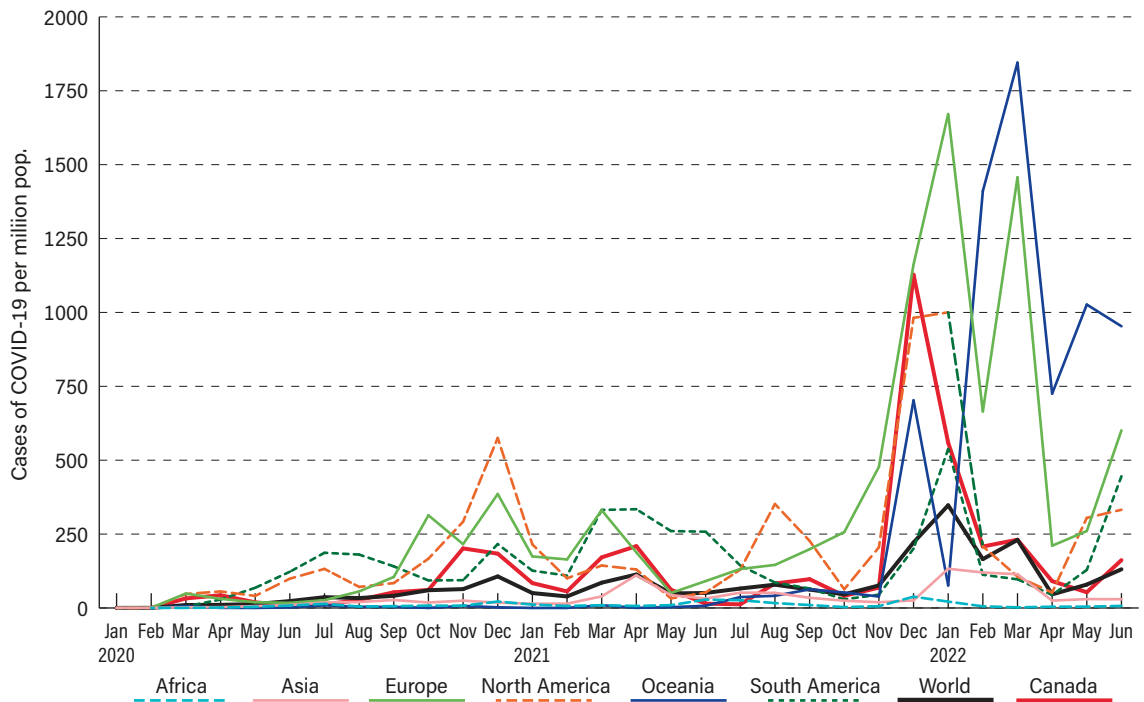
The course of pandemic cases globally and in Canada⁴ are illustrated in figures 1.1A to 1.1C. The start of the pandemic in Canada sees the first cases in late January of 2020 and the pandemic then proceeds in approximately seven waves based on the virus variant dominating each succeeding wave: Alpha peaking in April of 2020, Beta peaking in December of 2020, Gamma peaking in April of 2021, Delta peaking in September of 2021 and Omicron, which continued in winter of 2022, and whose variants appear to have spawned sixth and seventh waves. As of June 2022, the total number of COVID-19 cases around the world were estimated at 547,499,539 with 6.336 million deaths. In Canada, by the same date there had been 3.954 million cases and nearly 42,000 deaths. Since spring 2022, the spread of the Omicron waves and the reduction in testing rates in Canada and around the world make the data less easily comparable to earlier waves and this will likely complicate future research on this matter.

Figure 1.1A plots monthly cases of COVID-19 per million population in Canada and the world and vividly demonstrates the contagiousness of Omicron, which began driving the pandemic by early 2022. As of June 2022, Canada had had a total of 103,874 cases per million population; North America, 173,346 cases per million; South America, 137,345 cases per million; Europe, 274,510 cases per million; Asia, 33,537 cases per million; Africa, 8,783 cases per million; and Oceania, 227,517 cases per million. Areas of the world that did relatively well during the early waves in terms of infection rates—such as Oceania (Australia and New Zealand in particular) as well as parts of Asia—were hit much harder during the Omicron surge. At the same time, it should be noted that global differences in the quality and effectiveness of data gathering may account for some of the differences.

Figure 1.1B parallels the first figure by presenting monthly deaths per million population. By June of 2022, South America had the highest rate in the world when it came to total deaths per million at 3,005 followed by Europe (2,480) and North America (2,448). At 1,103 deaths per million, Canada ranks below these first three geographic divisions but is nevertheless higher than the World overall at 805 followed by Oceania at 327, Asia at 309, and Africa 186. In terms of overall mortality from COVID-19, Europe and the Americas appear to have been hit the hardest, with mortality particularly in South America spiking highest in early 2021. Canada experienced three major mortality spikes: in early 2020 during the first wave, in late 2020 and again in early 2022.

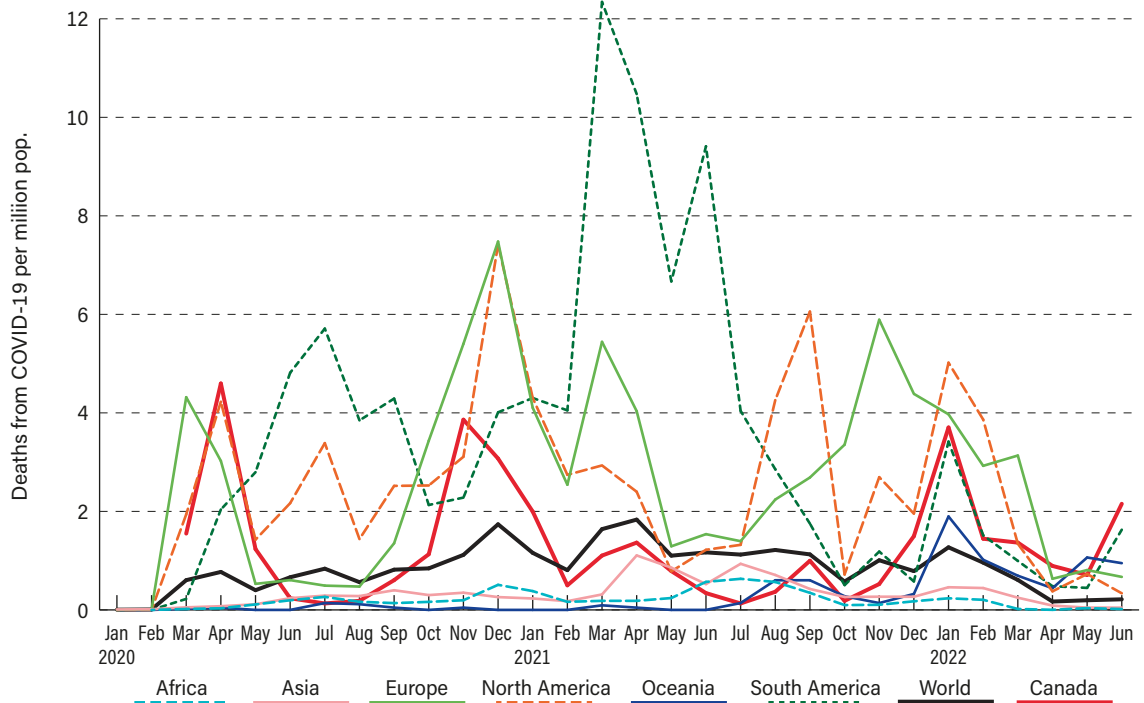
4. A detailed timeline of COVID19 emergency responses is provided by Lawson, Nathans, Goldenberg, Fimiani, and Boire-Schwab, 2022.

Figure 1.1A: Monthly new COVID-19 cases per million population in Canada and the world, January 2020–June 2022



Source: Mathieu *et al.*, 2022.

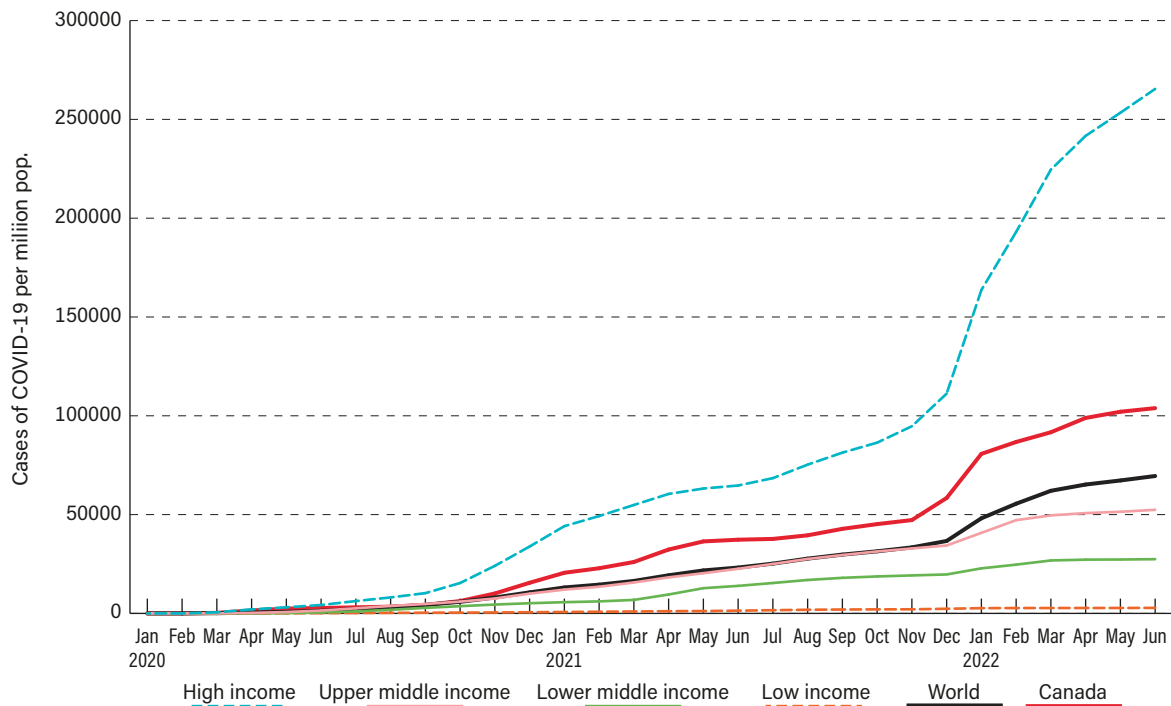
Figure 1.1B: Monthly COVID-19 deaths per million population in Canada and the world, January 2020–June 2022



Source: Mathieu *et al.*, 2022.

Finally, **figure 1.1C** illustrates that in terms of incidence and spread, COVID-19 cases per million population appear to have been particularly pronounced in high-income countries. As has been noted, the IMF Advanced Economies were particularly hard hit by the first wave of the pandemic (Di Matteo, 2021: 12). Again, this may be a function of high-income countries simply being better at gathering and managing data and reports of COVID-19 cases. Ultimately, there were differences in data quality across countries as well as differences in definitions of what constituted a death from COVID-19.⁵

Figure 1.1C: Total COVID-19 cases per million population in Canada, the world, and by income group, January 2020–June 2022

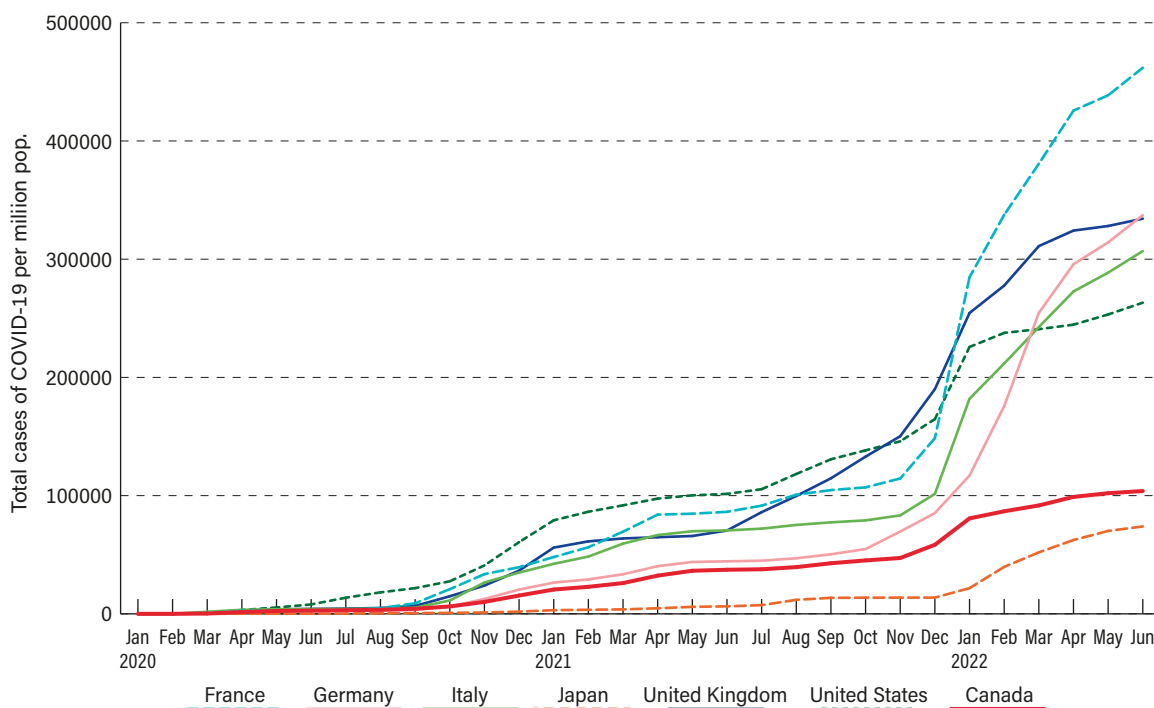


Source: Mathieu *et al.*, 2022.

Figure 1.2 presents country-specific evidence for total COVID-19 incidence from January 2020 to June 2022 in Canada and the other G7 countries. France was the hardest hit at 462,000 cases per million—meaning that nearly half the population had COVID—followed by Germany, the United Kingdom, and the United States. Canada was the second lowest by the end of June 2022, followed by Japan. When examined in terms of monthly

5. Some countries attributed to COVID-19 any death once the patient became a confirmed case, even if the death happened after two months possibly for other reasons (such as an accident), while in some other countries, a COVID-19 death was recorded when death occurred within a certain period (ranging from 2 to 8 weeks) after the onset of COVID-19 symptoms (Cao, Hiyoshi, and Montgomery, 2020). As well, underreporting bias has been reported in some countries (see Biswas, Afiaz, and Hug, 2020).

Figure 1.2: Total COVID-19 cases per million population in Canada and G7 countries, January 2020–June 2022

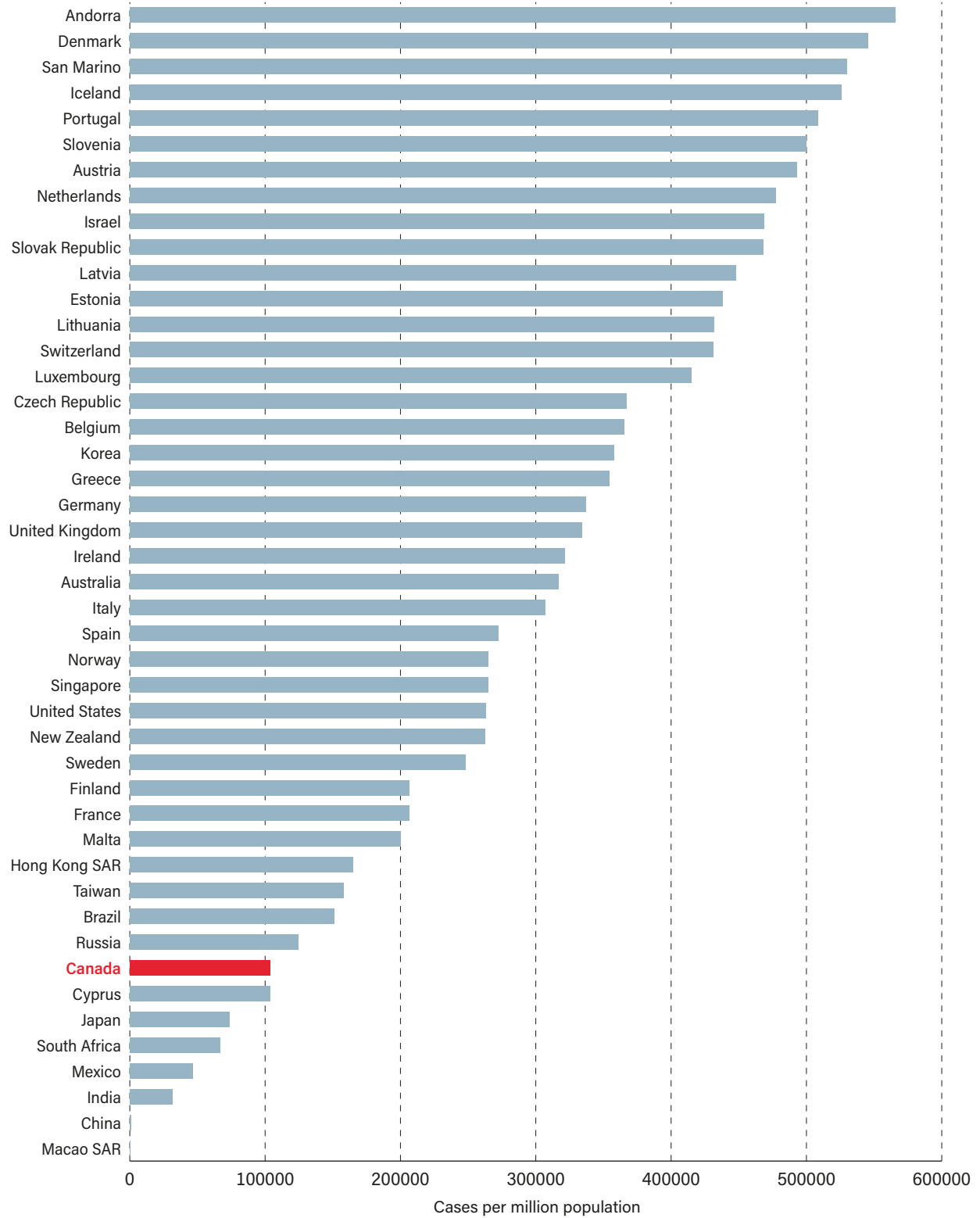


Source: Mathieu *et al.*, 2022.

incidence, it appears that the recent waves of the pandemic dominated by the Omicron strain were indeed the most contagious, with all the G7 countries showing spikes in the last two months of 2021 and Germany, France, and Italy with particularly large spikes in the first few months of 2022.

Figures 1.3A to 1.3F examine aspects of the COVID-19 pandemic specifically for the IMF Advanced Economies as well as additional comparison for the BRIC countries (Brazil, Russia, India and China). South Africa, which is the most advanced economy in Africa on the basis of GDP and industrial development, and Mexico were also included. By June 2022, total COVID-19 cases per million among the IMF Advanced Economies (**figure 1.3A**) range from highs of 565,892 and 545,605 for Andorra and Denmark to lows of 73,914 and 401 in Japan and Macao, respectively. At 103,874 total cases per million population, Canada performed remarkably well as the fourth lowest in the IMF Advanced Economies and 8th lowest of all 45 countries in figure 1.3A. The less economically developed countries of the BRIC as well as South Africa and Mexico all reported substantially fewer total cases per million than the more developed countries. Again, it could simply be that the IMF Advanced Economies are freer and more open about data collection and dissemination as well as having better data-gathering infrastructure and therefore recording more cases (Di Matteo, 2021: 14).

Figure 1.3A: Total COVID-19 cases per million population, IMF Advanced Economies, and BRIC plus South Africa and Mexico, as of June 2022



Source: Mathieu *et al.*, 2022.

At the same time, while these less economically developed economies may have done well in total incidence, they appear to have fared less well in deaths from COVID-19. **Figure 1.3B** shows that total deaths per million for Brazil and Russia are comparable to some of the highest death totals in the IMF Advanced Economies, namely the Czech and Slovak Republics, Lithuania, Slovenia, Latvia, and the United States. Of 38 IMF Advanced Economies, Canada was 27th at 1,103 deaths per million; Japan was the lowest at 248 total deaths per million. Of all countries in figure 1.3B, Canada ranked 31st out of 44 countries.

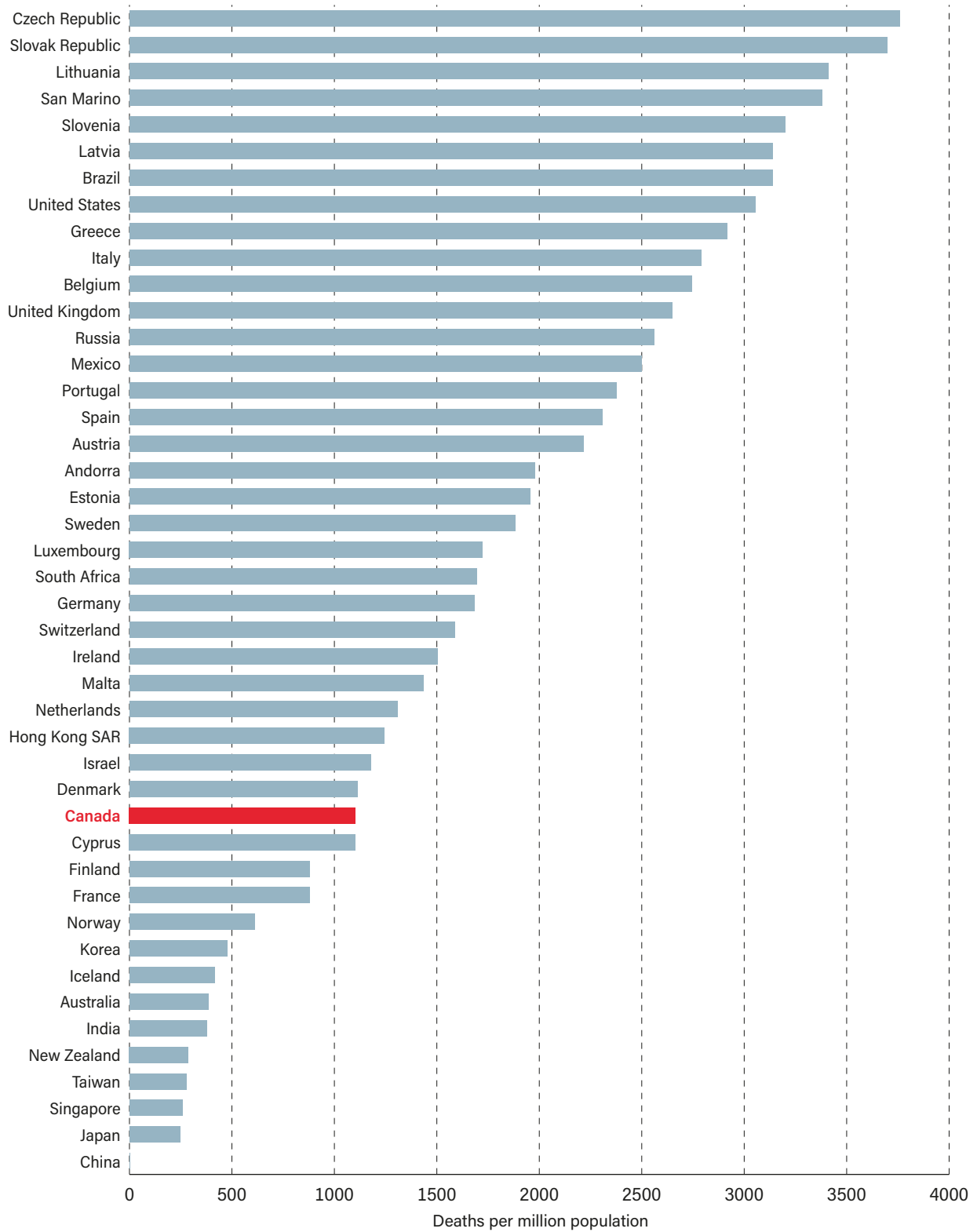
Another way at looking at the mortality rate from COVID-19 is not in terms of deaths per million but in terms of crude mortality or case fatality rates from COVID-19 as shown in **figure 1.3C**. That is, if one contracted COVID-19, what was the probability of dying? This mortality rate is calculated by total deaths from COVID-19 by June 2022 divided by total cases of COVID-19 by June 2022. Here, the ability of the health systems of more advanced economies to treat and deal with cases of COVID-19 better than less developed countries becomes quite apparent. Again, accurate data on both COVID cases and deaths is important here but, nevertheless, crude mortality from COVID-19 amongst the IMF Advanced Economies was highest in the United States at 1.2% and lowest in Iceland at 0.1%.

In the six less-developed countries, crude mortality was 5.4% in Mexico, 2.5% in South Africa, and 2.1% in Brazil and Russia. Canada does not fare as well in this ranking as its crude mortality rate of 1.1% is the second highest in the list of 38 IMF Advanced Economies and 7th highest in the countries in figure 1.3C. The main reason for this is that, during the first wave of the pandemic, Canada did a particularly poor job of protecting the elderly in long-term care. In a comparison in June of 2020 of Canada and 16 other OECD countries with sufficient data, it was noted that, while Canada's overall COVID-19 mortality rate was relatively low compared with the rates in other OECD countries, it had the highest proportion of deaths occurring in long-term care. As of June 2020, long-term care residents accounted for 81% of all reported COVID-19 deaths in Canada, compared with an average of 38% in other OECD countries (CIHI, 2020). By early 2021, this total had improved somewhat as better measures were put in place for long-term care, but it remains that almost 70% of total COVID-19 deaths in Canada had occurred in long-term care homes (Ireton, 2021).

One of the factors mitigating the mortality impact of COVID-19 in both long-term care homes and the public was the arrival of vaccines and other treatments by the end of 2020.⁶ **Figure 1.3D** presents data for the IMF Advanced Economies, the BRIC plus South Africa and Mexico on total vaccinations administered per 100 people by June of 2022. Amongst the IMF

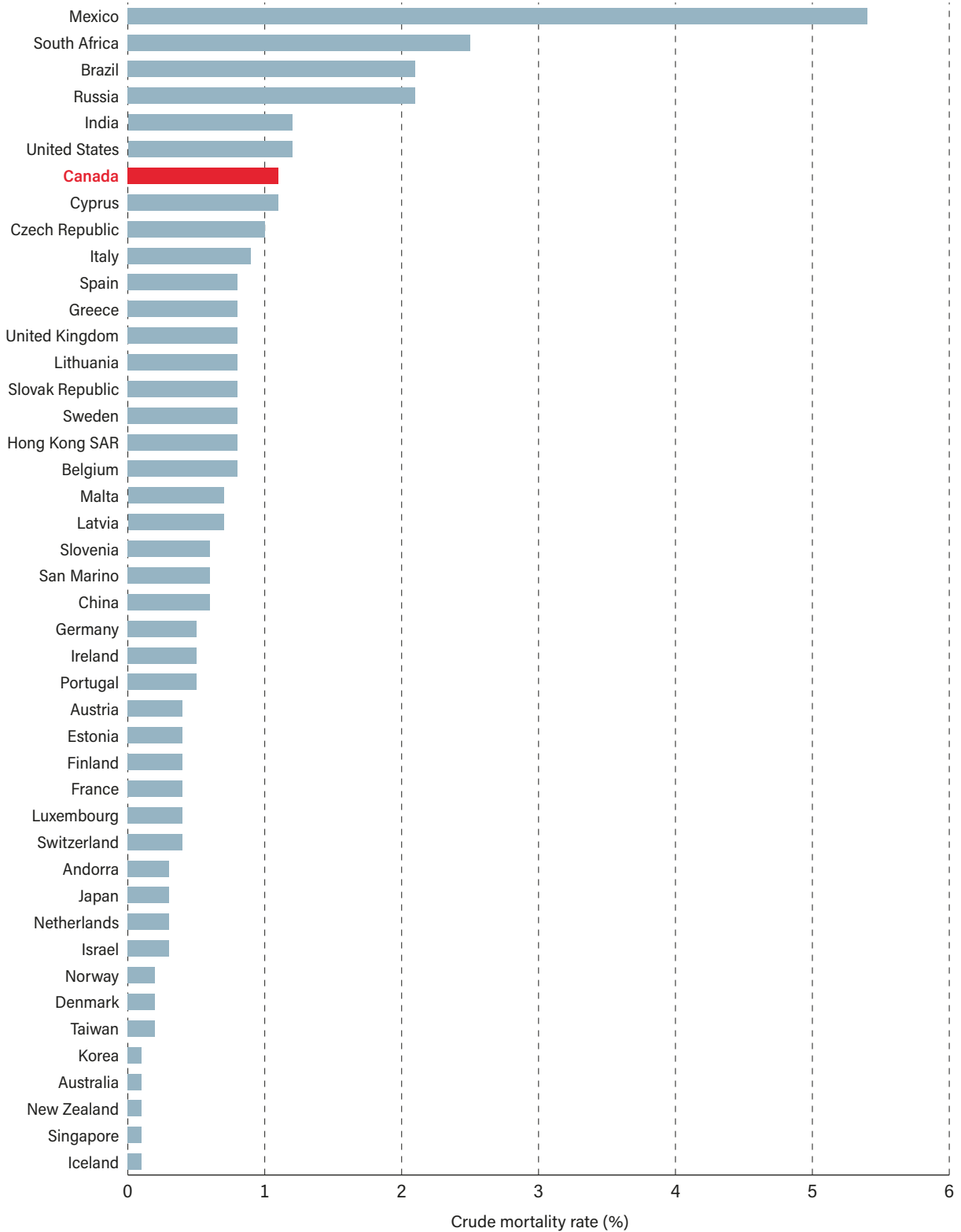
6. Most notable were those by Moderna, Pfizer-BioNTech, AstraZeneca/COVISHield, Janssen, Johnson and Johnson, and Novavax. As well, antivirals have been developed by Dr. Reddys Laboratories (Faviporavir) and Gilead Sciences (Remdesivir). Most recently, there has been the development of the antiviral Paxlovid by Pfizer.

Figure 1.3B: Total COVID-19 deaths per million population, IMF Advanced Economies, and BRIC plus South Africa and Mexico, as of June 2022



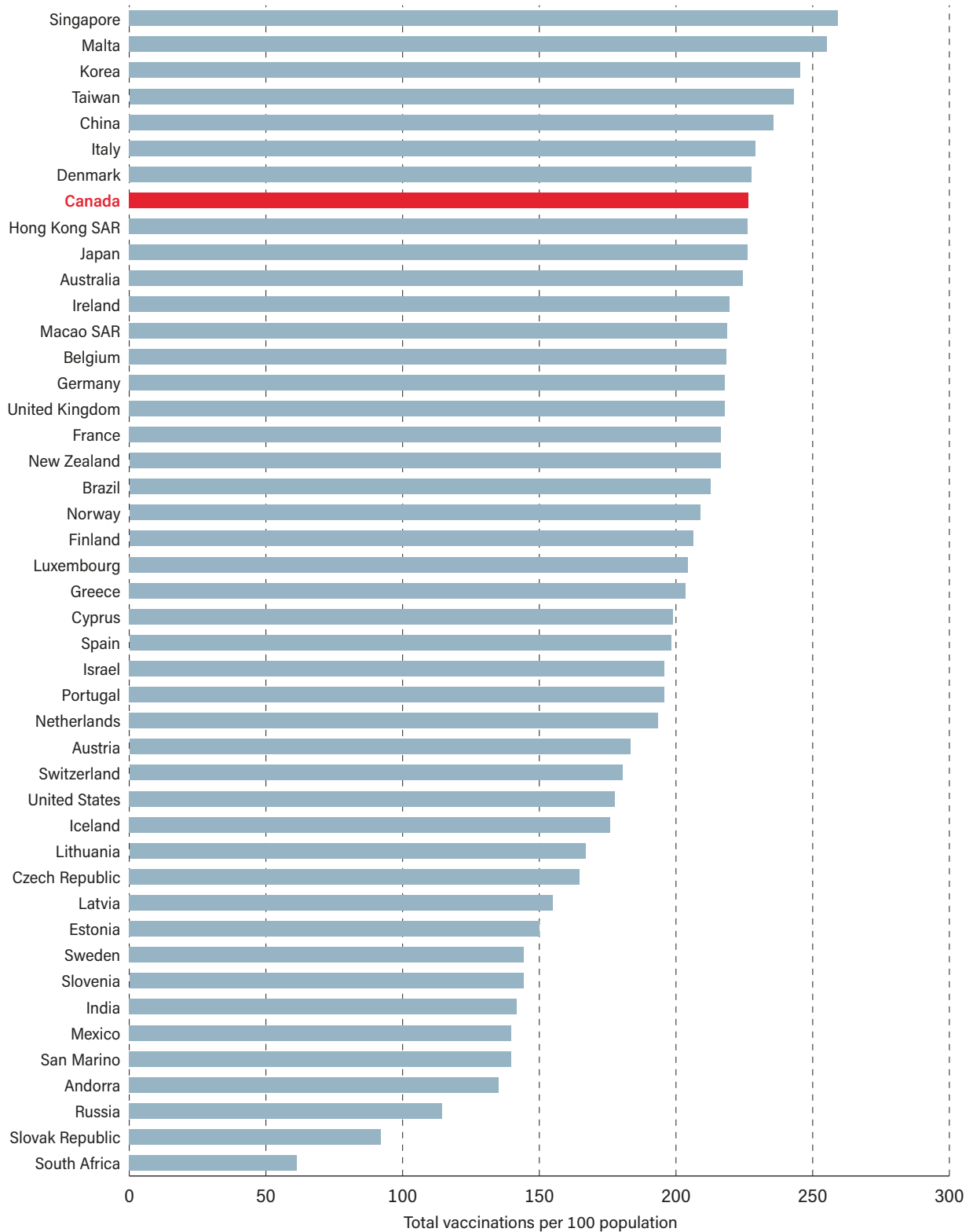
Source: Mathieu *et al.*, 2022.

Figure 1.3C: Crude COVID-19 mortality rate (%), IMF Advanced Economies, and BRIC plus South Africa and Mexico, as of June 2022



Source: Mathieu *et al.*, 2022.

Figure 1.3D: Total vaccinations per 100 population, IMF Advanced Economies, and BRIC plus South Africa and Mexico, as of June 2022 (or most recent month)



Source: Mathieu *et al.*, 2022.

advanced economies, the uptake ranged from a high of nearly 260 shots per 100 people for Singapore and Malta to lows of 135 in Andorra and 92 in the Slovak Republic. Vaccination uptake rates in the six less-developed countries were comparable to many countries in the IMF Advanced Economies, with China and Brazil showing vaccination rates comparable to Italy and Canada while India and Brazil were more akin to Sweden and Slovenia. At 227 vaccinations per 100 population, Canada had the 7th highest rate of vaccine uptake of the IMF Advanced Economies and the 8th highest amongst the total set of countries in figure 1.3D.

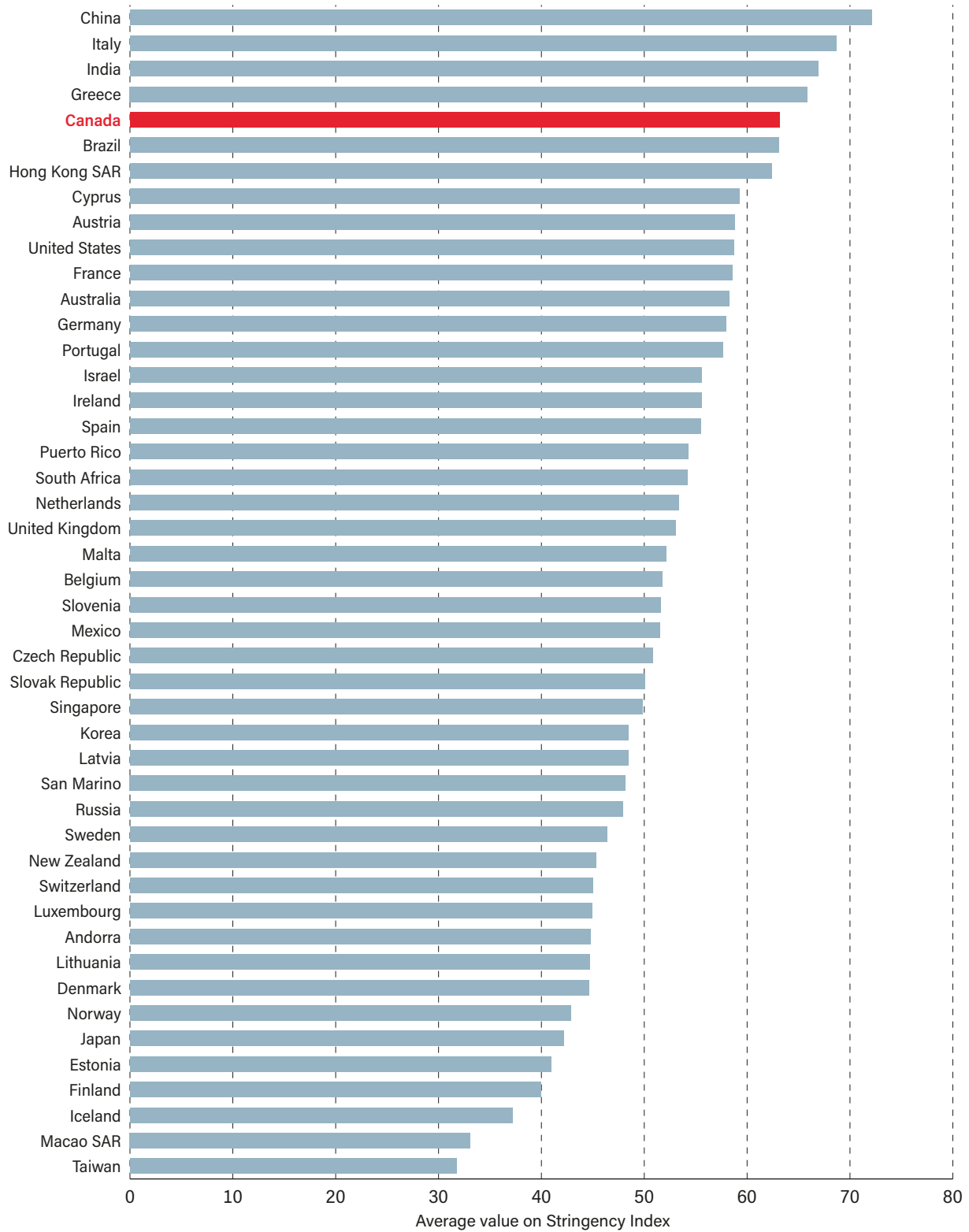
In the absence of vaccines, the response of most countries early in the pandemic was assorted stringency measures such as lockdowns, quarantines, and travel restrictions, which then persisted to varying degrees over the next two years. Other important public-health measures included effective case testing and tracking, wearing of masks, and public compliance with, and enforcement of, public-health measures including restrictions on public gatherings and travel. Measuring the restrictions employed as a response to the pandemic has been given an empirical measure by the Oxford University's COVID-19 Government Response Tracker (OxCGRT), which is a composite measure of the strength of the restriction response to COVID-19. The measure is a simple additive score of quantitative policy indicators⁷ available at points in time measured on an ordinal scale, rescaled to vary from 0 to 100 with 0 as the lowest stringency and 100 as the highest (Hale *et al.*, 2021). **Figure 1.3E** presents the average monthly value of the Stringency Index for the period from January 2020 to June 2022. Amongst the IMF Advanced Economies, Canada had the third highest stringency value, behind Italy and Greece, while the lowest average values were for Iceland, Macao, and Taiwan. Average stringency during the pandemic was also very high in China, India, and Brazil. Amongst all the countries in figure 1.3E, Canada ranks 5th highest for stringency.

Along with stringency measures and vaccinations, another important response to the pandemic was testing for COVID-19. Cao, Hiyoshi, and Montgomery (2020) using aggregate international data found testing policies are associated with a 2.23% decrease in case fatality rates (CFR) while strictness of anti-COVID-19 measures—from the COVID-19 Government Response Tracker (OxCGRT) was not significantly associated with CFR overall. However, the authors also found a higher position in the OxCGRT was associated with higher CFR in higher-income countries with active testing policies.⁸ **Figure 1.3F** presents total tests per 1,000 population from January 2020 to May

7. Among the indicators included are school closures, workplace closures, canceling of public events, restrictions on gatherings, closing public transport, public information campaigns, stay-at-home directives, restrictions on internal movement, international travel controls, testing policy, contact tracing, face coverings, and vaccination policy.

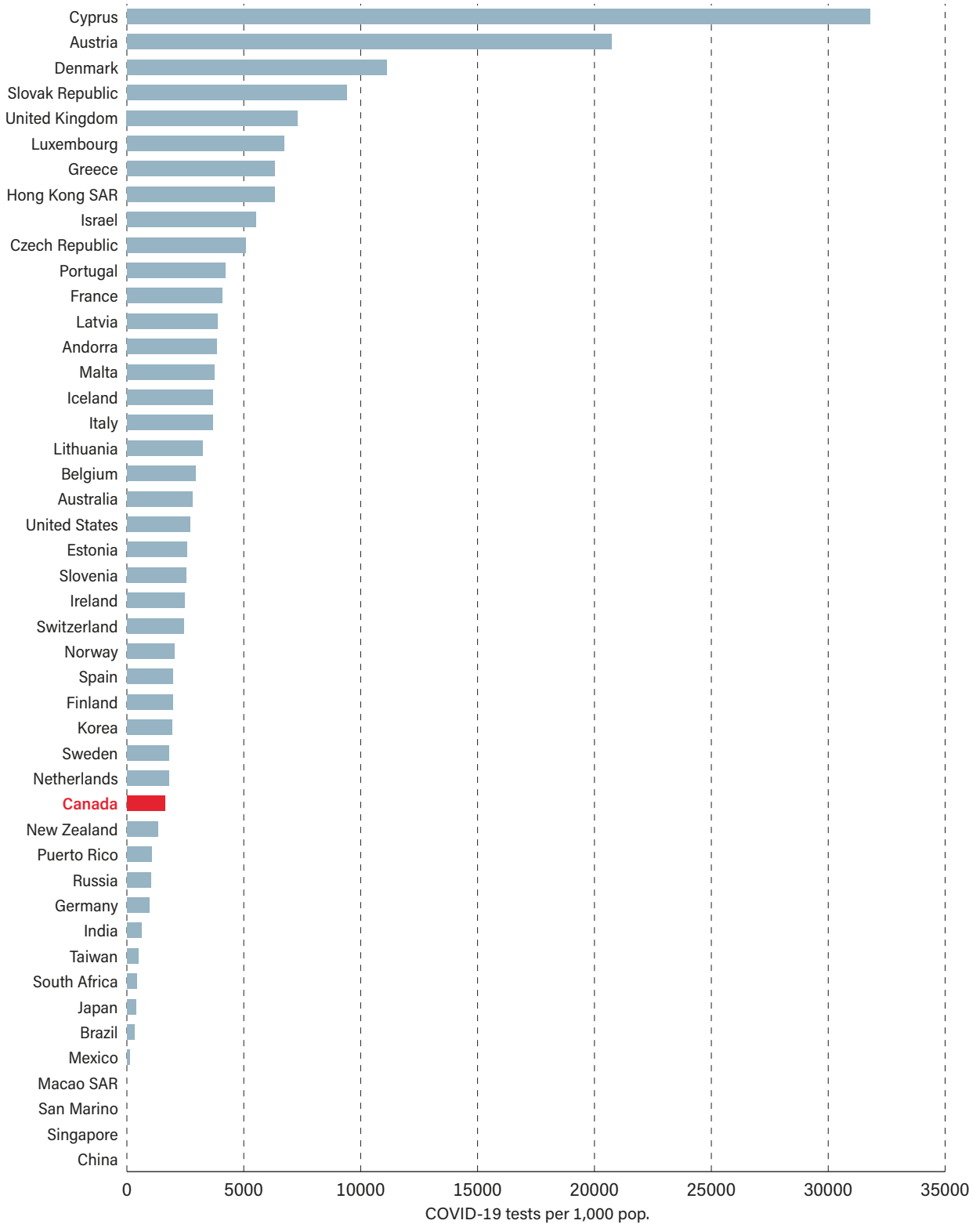
8. It should be noted that it may be difficult to infer causality from these results. Countries with higher case fatality rates may have enacted more stringent anti-COVID measures.

Figure 1.3E: Average value on Stringency Index (OxCGRT), IMF Advanced Economies, and BRIC plus South Africa and Mexico, January 2020 to June 2022



Sources: Hale *et al.*, 2021; Mathieu *et al.*, 2022; calculations by author.

Figure 1.3F: Total COVID-19 tests per 1,000 population, IMF Advanced Economies, and BRIC plus South Africa and Mexico, January 2020 to June 2022 (or most recent month)

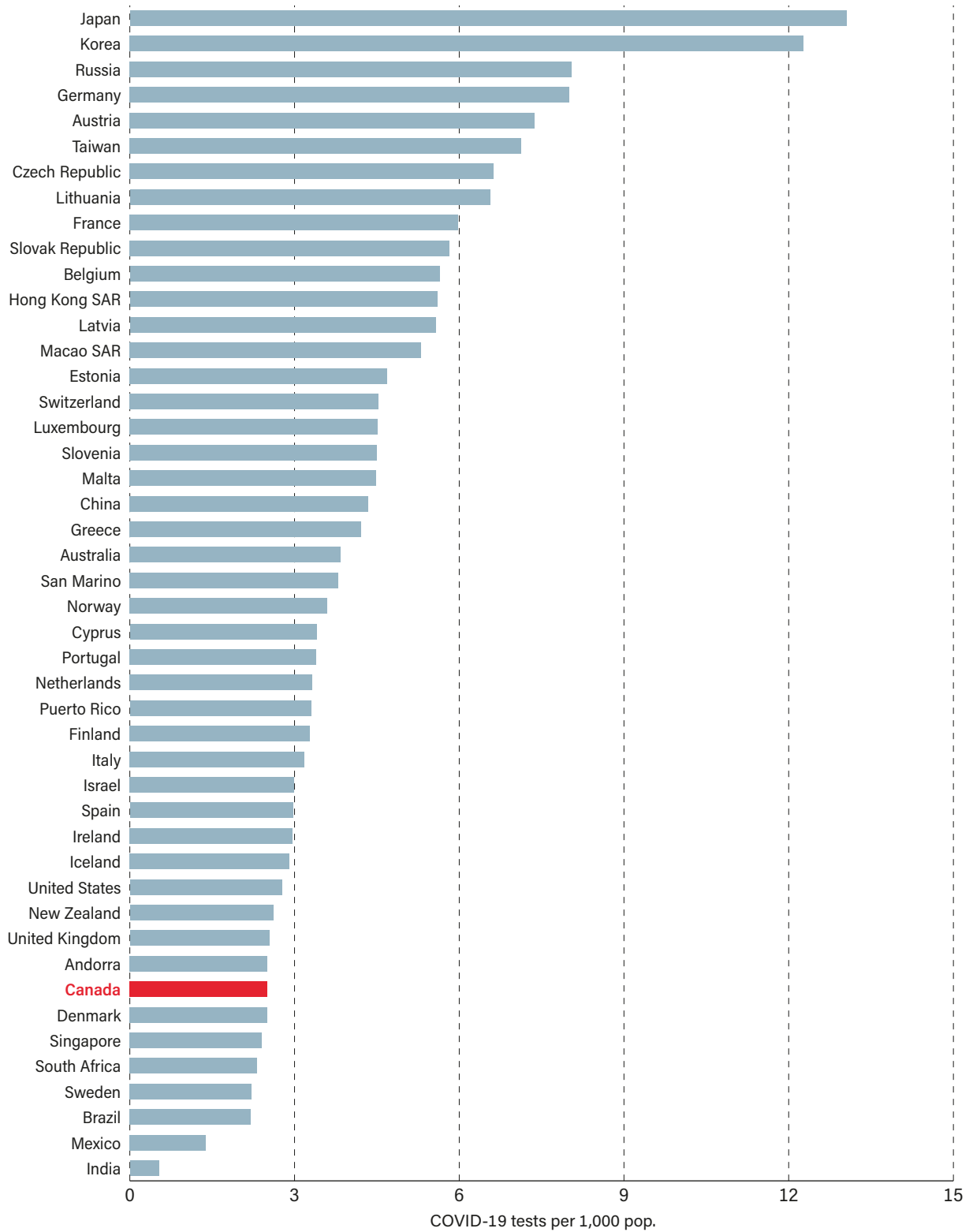


Sources: Hale *et al.*, 2021; Mathieu *et al.*, 2022; calculations by author.

2022. Cyprus, Austria, and Denmark reported the highest testing rates amongst the IMF advanced economies while Germany, Taiwan, and Japan had the lowest testing rates. Macao, San Marino, Singapore, and China did not have data on the testing rate available. Canada, at 1,629 tests per 1,000 population, ranked near the bottom at 32 out of 37 IMF Advanced economies and 32 out of the 42 countries ranked in figure 1.3F with available data.

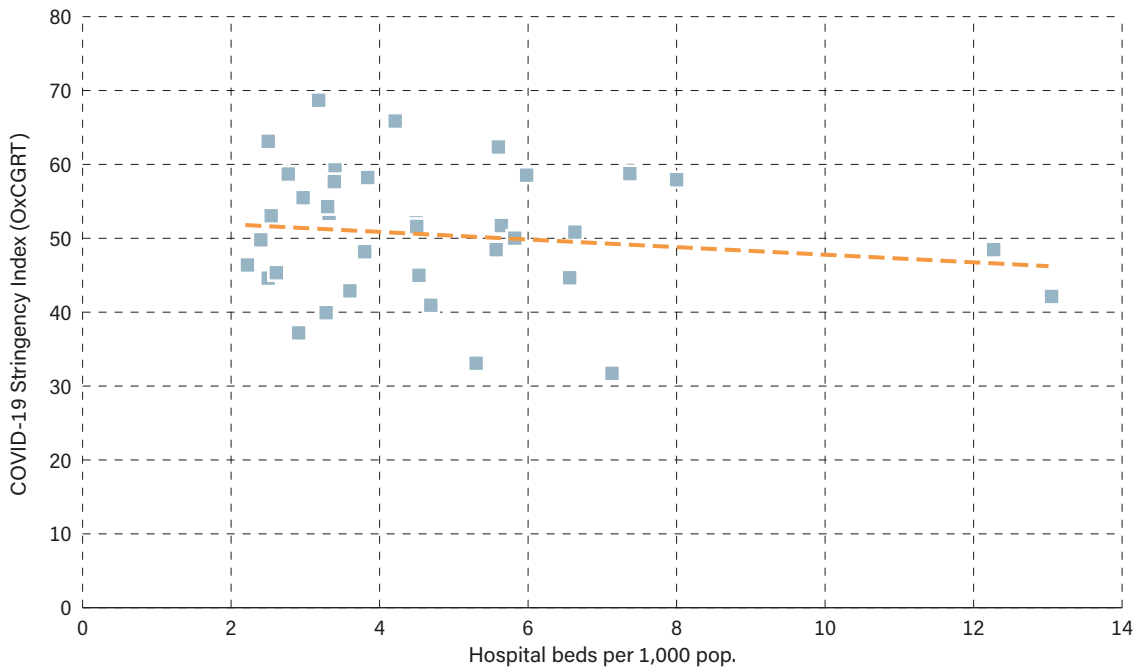
In the end, countries relied on a trifecta of measures over the course of the pandemic—stringency measures and restrictions, testing, and vaccinations—and the aim was to control the spread of the COVID-19 pandemic and prevent it from overwhelming a country’s medical resources and, in particular, hospital systems. Indeed, the “intensity” of hospital beds as measured by beds per capita in a country was correlated with the severity of stringency measures as well as the mortality from COVID-19. **Figure 1.4A** plots ranked hospital beds per 1,000 population for the IMF Advanced Economies. Bed intensity was highest in Japan, Korea, Germany, and Austria and lowest in Canada, Denmark, Singapore, and Sweden. Bed intensity in Russia and China is comparable to countries in the top third of the IMF Advanced Economies while South Africa and Brazil are more comparable to Canada. In figure 1.4A, Canada ranked 37th out of 40 IMF Advanced Economies and 39th out the total of 46 countries. Countries with lower hospital bed intensity generally also had more intensive stringency measures as illustrated in the correlation presented in **figure 1.4B**. As well, the crude COVID-19 mortality rate diminished as hospital beds per 1,000 increased, as illustrated in the correlation presented in **figure 1.4C**.

Figure 1.4A: Hospital beds per 1,000 population, IMF Advanced Economies, and BRIC plus South Africa and Mexico, 2022



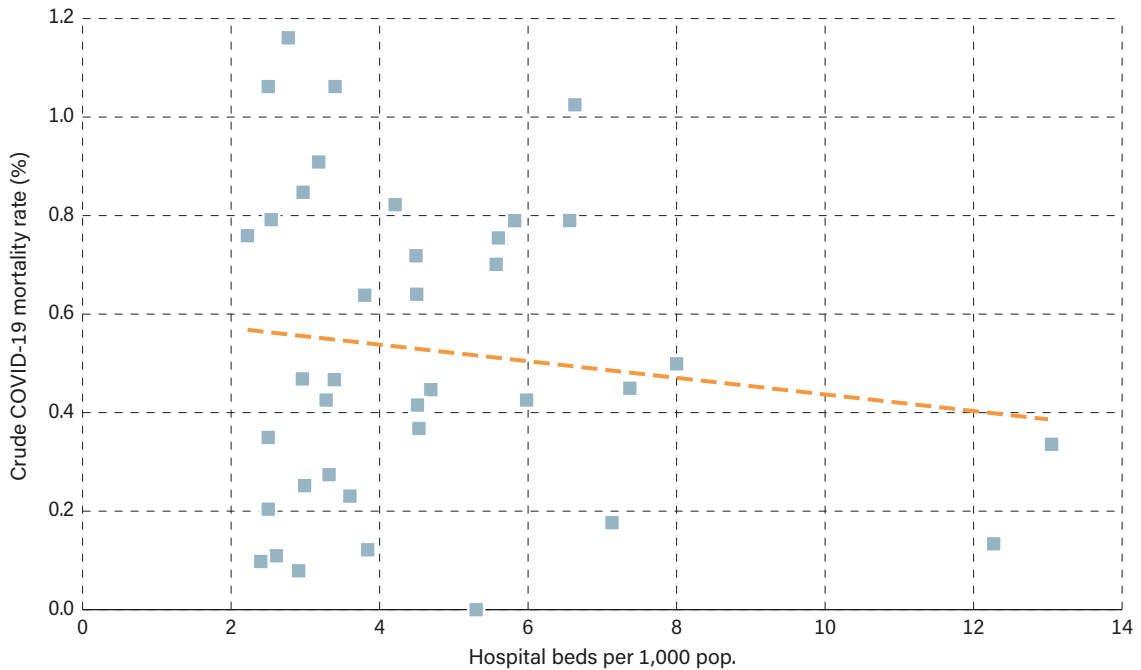
Source: Mathieu *et al.*, 2022.

Figure 1.4B: Average Stringency Index (OxCGRT) compared to hospital beds per 1,000 population, IMF Advanced Economies, January 2020 to June 2022



Sources: Hale *et al.*, 2021; Mathieu *et al.*, 2022.

Figure 1.4C: Crude COVID-19 mortality rate (%), January 2020 to June 2022, compared to hospital beds per 1,000 population, May 2022, IMF Advanced Economies



Sources: Mathieu *et al.*, 2022.

Economic Impact of the Pandemic

The COVID-19 pandemic and the response via assorted public-health measures implemented to slow the virus's spread, particularly during the early waves, resulted in a major economic contraction in the spring of 2020 in Canada and around the world and with disparate sectoral effects.⁹ While there was then a period of recovery, even with the advent of vaccines, subsequent viral surges and the lockdowns and restrictions used to curb the spread saw continued disruptive effects internationally on employment and income as well as public finances.¹⁰

In general, the COVID-19 pandemic and its associated disruptive effects operated through several channels. First there was the novelty of the virus in the initial absence of a vaccine and effective treatments. The absence of initial information and subsequent uncertainty, shortages of protective equipment, and the easy and rapid transmission of the virus, led to transmission and disruption as the public initially retreated from activity. Second was disruption of both international and domestic supply chains given government-imposed mandated control measures such as travel restrictions and stay-at-home orders and the accompanying disruption of interdependent and integrated trade and production chains.

Third was the reality that, unlike past pandemics when economies were more commodity intensive, the production and consumption patterns characterizing modern economies were dominated by services particularly prone to disruption, including food, accommodation, retail, and travel. At the same time, increasing digitization of the workplace allowed for many service activities to be done remotely. The shift of employment to a home activity is a feature that is expected to persist to some degree, particularly for workers with skills that enable them to work remotely, much to the chagrin of some big city mayors with substantial downtowns (Lund, Madgavkar, Manyika, and Smit, 2020; Osman, 2022).

Finally, there was the unprecedented size of the governments' fiscal and economic response to the pandemic, which was not a feature marking past pandemics. This last feature was intended to support the medical response through health resources as well

9. The literature on the economic effects of the pandemic both on entire economies and specific sectors is large and growing. For some samples, see Altig *et al.*, 2020; Ashraf, 2020; Boissey and Rungcharoenkitkul, 2020; Rothengatter, Zhanga, Hayashi, Nosach, Wang, and Oume, 2021.

10. For an overview of the impact of the pandemic globally during its first year, see Di Matteo, 2021.

as stabilize employment and income in the economy in the wake of the economic disruption, though much of the legacy appears to be lingering high levels of public debt and rising inflation (Ebrahimy, Igan, and Martinez Peria, 2020).

The remainder of this report will overview the economic impact of the pandemic on Canada and the world using a few select key indicators. Where possible, some correlations will be drawn, particularly about the intensity of the pandemic and effects on assorted aspects of economic performance.

GDP and economic growth

The first wave of the pandemic in the spring of 2020 was the most severe in its impact on both Canadian and world economies given its novelty, uncertainty about its consequences and spread, and assorted measures to contain the virus in the absence of either vaccines or immunity. In the spring of 2020, the pandemic quickly shut down large swathes of the economy, though the economy subsequently went on to recover more rapidly than expected as firms, employees, and consumers adapted to the new realities of life in the midst of a pandemic. Subsequent waves of the pandemic did not result in GDP contractions as serious as those seen during the first wave but there nevertheless were serious impacts on the world economy given the integrated nature of global supply chains. There was also a substantial range of effects upon real GDP around the world.

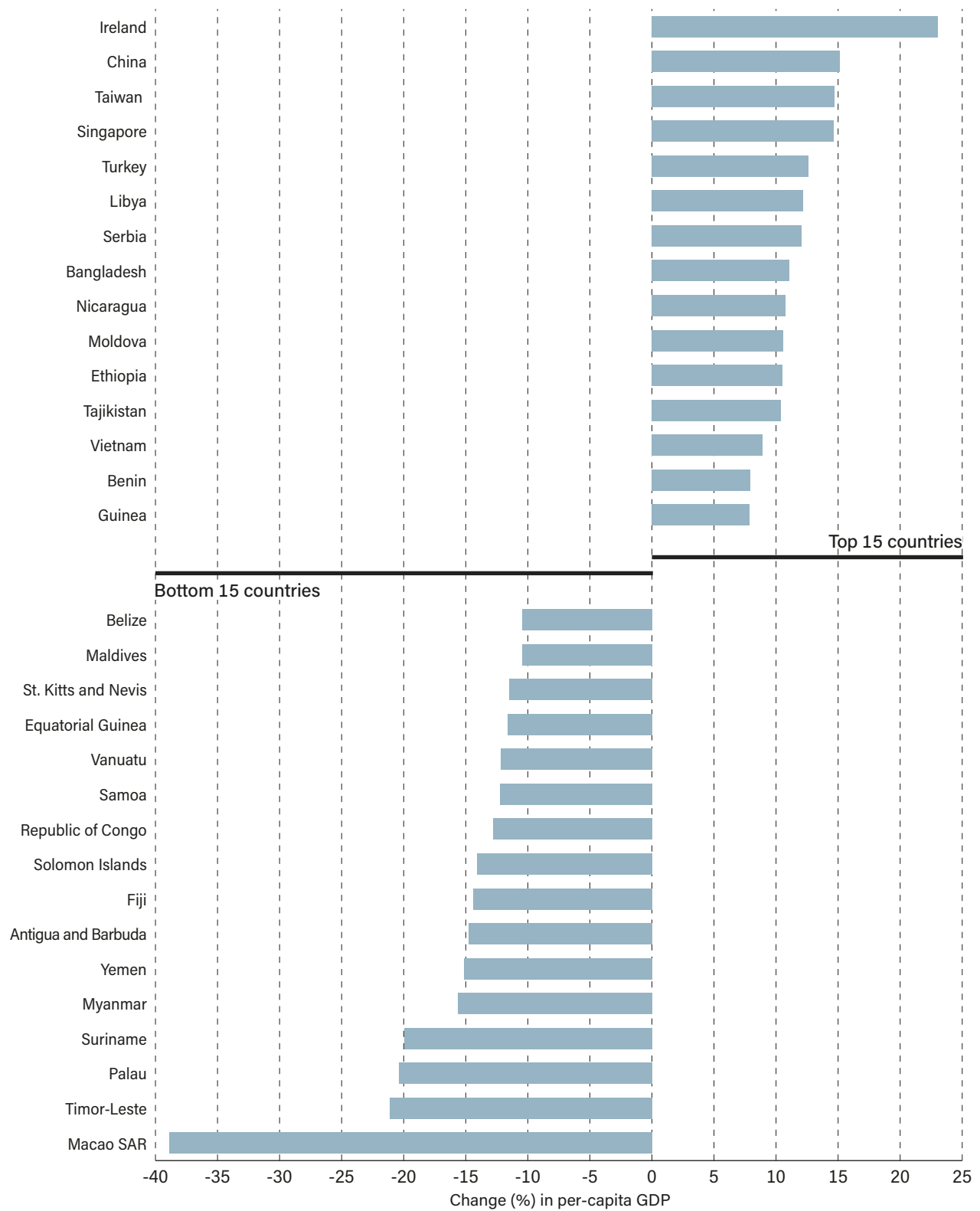
Figures 1.5A to 1.5D examine the pandemic era's estimated effect on economic output as measured by real per-capita GDP growth.¹¹ **Figure 1.5A** looks at growth in real per-capita GDP for the period from 2019 to 2022¹² for the top and bottom 15 countries globally. The three fastest growing real per-capita GDPs were for Ireland (23%), China (15.1%), and Taiwan (14.7%), while the worst performer was Macao which saw its real per-capita GDP shrink by almost 40%.¹³ **Figure 1.5B** presents the real per-capita GDP growth over the course of the pandemic for the IMF Advanced Economies plus comparator averages for the G7, the World and the IMF Advanced Economies, as well as the BRIC countries, South Africa, and Mexico. In 2019, the G7 countries accounted for 32% of world output while the IMF Advanced Economies (which include the G7) accounted for 43% of

11. In real per-capita Purchasing Power Parity Dollars as obtained from the IMF (2022a; 2022b) database.

12. It should be noted that 2022 is largely an estimate.

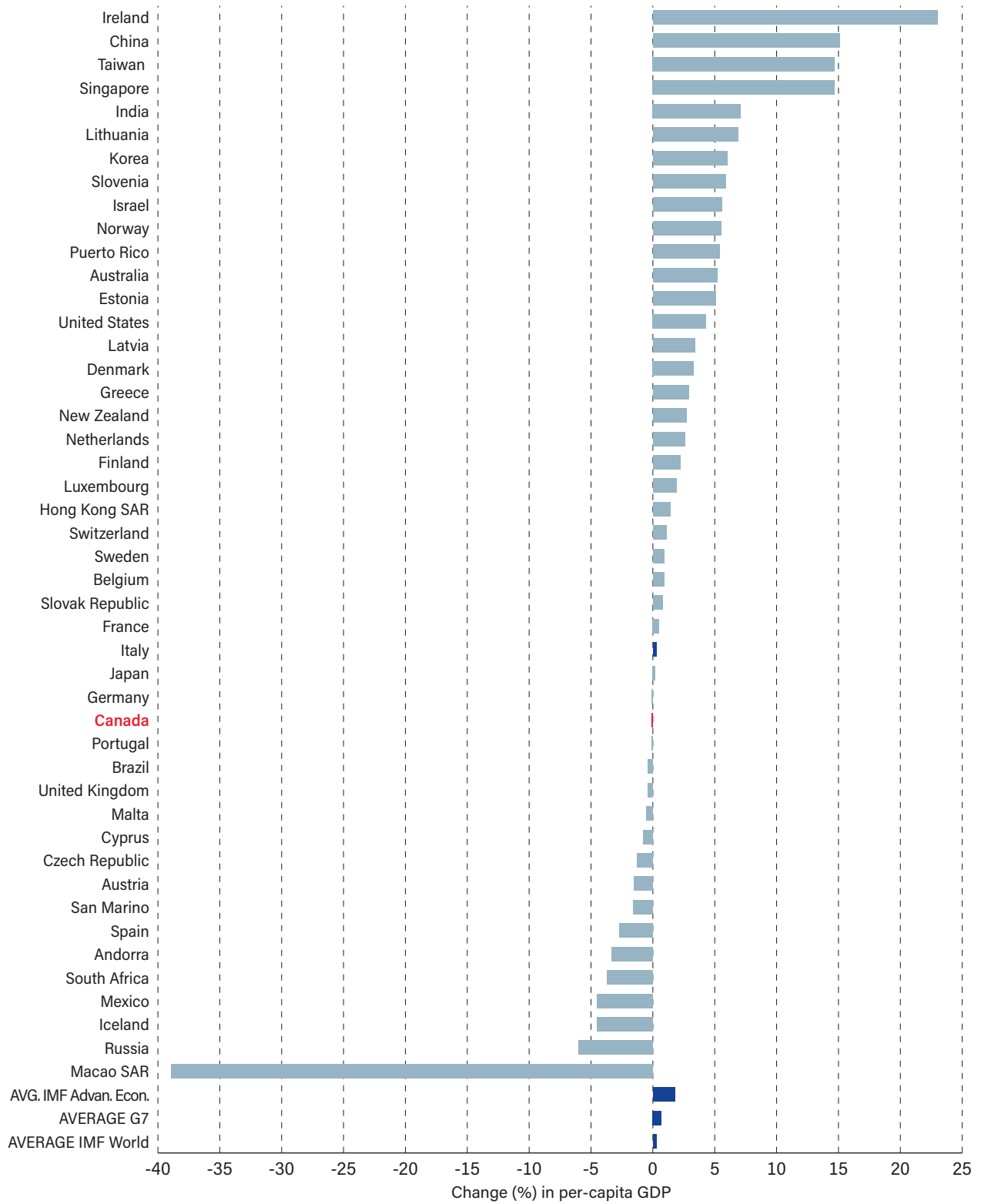
13. Guyana was actually the fastest growing at 151% but was omitted for the purposes of the graph as an extreme outlier.

Figure 1.5A: Change (%) in real per-capita GDP (PPP dollars), top and bottom 15 countries, 2019–2022



Note: Guyana at 151% was excluded as an extreme outlier.
 Sources: International Monetary Fund, 2022a, 2022b.

Figure 1.5B: Change (%) in real per-capita GDP (PPP dollars), IMF Advanced Economies, and BRIC plus South Africa and Mexico, 2019–2022



Sources: International Monetary Fund, 2022a, 2022b.

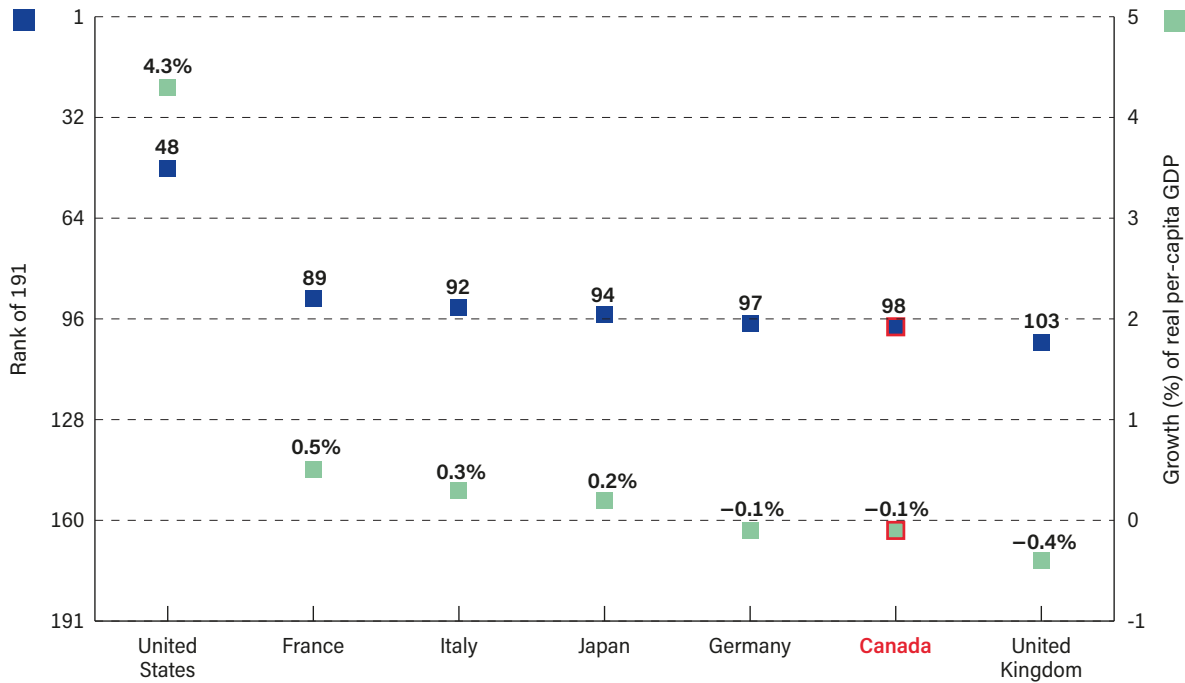
world output.¹⁴ The four BRIC countries—Brazil, Russia, India and China—plus South Africa and Mexico accounted for 32% of world output. Thus, the 46 countries in this figure account for about three-quarters of world economic output.

When the IMF Advanced Economies are examined, about two thirds of them did see growth over the 2019-to-2022 period while the other third saw declines. Ireland, Taiwan, and Singapore were the top three for growth while Andorra, Iceland and Macao had the worst performance. On average, the 40 IMF Advanced Economies grew their real per-capita GDP an estimated 1.8% from 2019 to 2022 while the world average was 0.3% and the G7 average was 0.7%. Canada's real per-capita GDP growth was negative and ranked 29th out of the 40 IMF Advanced Economies and 31st out of the 46 countries in figure 1.5B. The BRIC countries plus South Africa and Mexico ranged from a high of 15% for China to a low of -6% for Russia.

Figure 1.5C presents the G7 countries ranked according to their estimated real per-capita GDP growth from 2019 to 2022 and provides their global ranking out of 191 countries. The United States led the G7 countries with growth of 4.3% while the remainder were all below 0.5%, with Germany, Canada, and the United Kingdom showing declines. Canada had the second-worst performance of the G7 countries and ranked 98th out of 191 countries for real per-capita GDP growth during the pandemic period. Finally, **figure 1.5D** plots the relationship between real per-capita GDP growth over the 2019-to-2022 period against the log of average monthly stringency as measured by the Oxford University's COVID-19 Government Response Tracker (OxCGRT). There is a weak correlation between real per-capita GDP growth over the pandemic and average stringency: higher stringency is associated with lower growth though ultimately this appears to be driven by outliers.

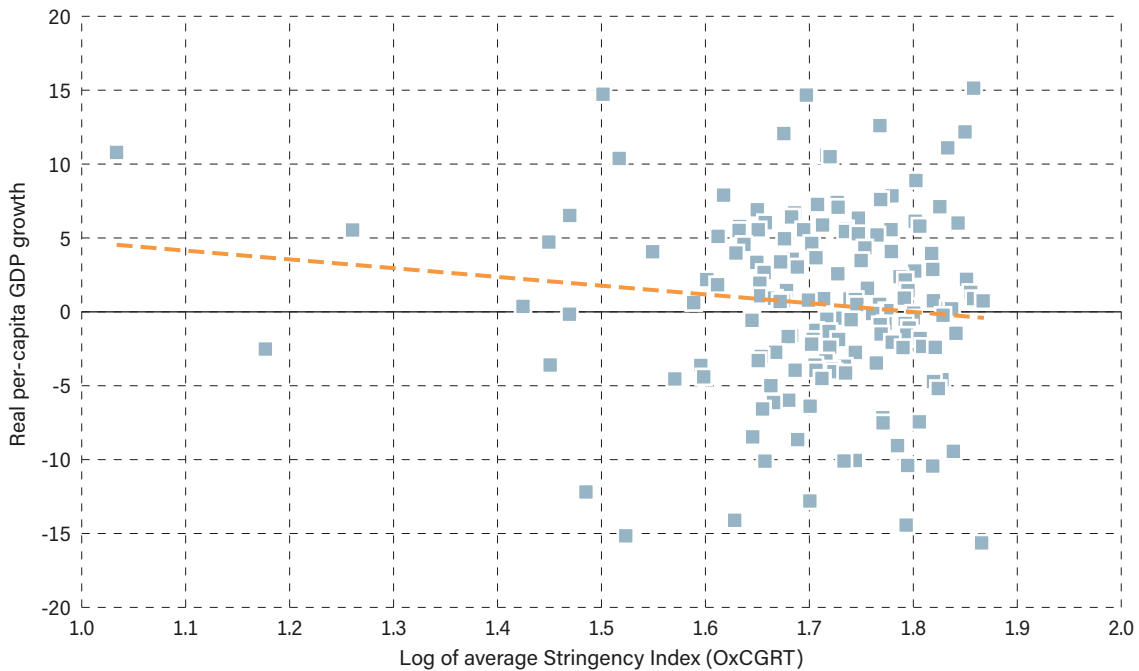
14. Author's calculations. Defined as GDP in billions of purchasing power parity international dollars. Source: IMF (2022a; 2022b) database.

Figure 1.5C: Growth rate (%) of real per-capita GDP in the G7 countries, 2019–2022, and rank of each among the 191 IMF countries



Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.5D: Relationship between real per-capita GDP growth, 2019–2022, and the log of average Stringency Index (OxCGRT) during the pandemic, IMF countries



Sources: Hale *et al.*, 2021; International Monetary Fund, 2022a; 2022b.

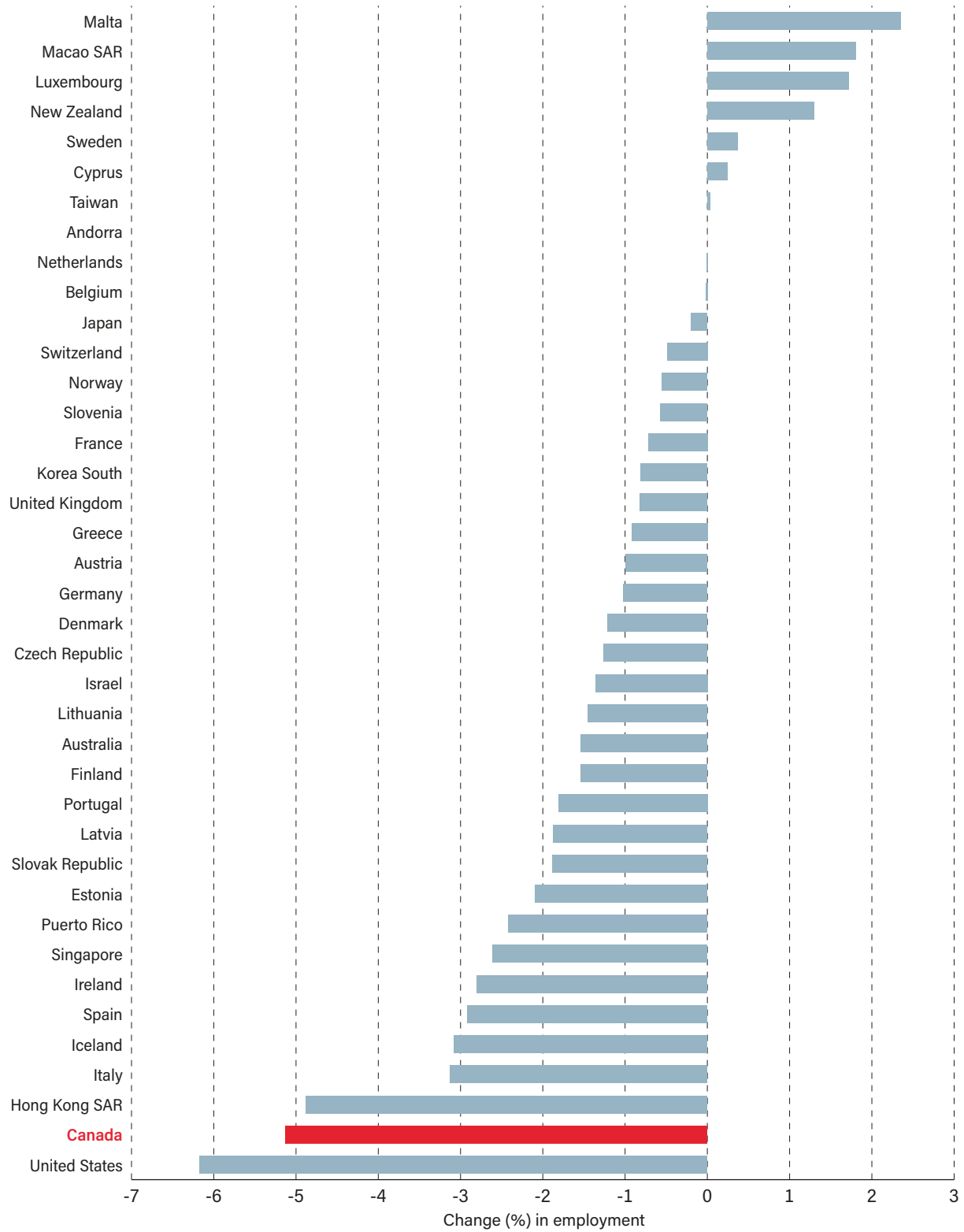
Employment and unemployment

Figures 1.6A to 1.6D present evidence on the impact of the pandemic years on employment, focusing on the IMF Advanced Economies. **Figure 1.6A**, **figure 1.6B**, and **figure 1.6C** present the ranked employment growth in 2020, 2021, and 2022 (an estimate). In 2020, the first year of the pandemic, nearly three quarters of the IMF Advanced Economies saw a drop in employment levels. At the same time, some countries did not see a drop, ranging from Malta, which saw 2.4% growth, to Andorra, which stayed flat. The remaining countries ranged from -0.1% for the Netherlands to -6.2% for the United States.¹⁵ Canada during the first pandemic year had the second worst drop of the IMF Advanced Economies coming in just ahead of the United States at -5.1%. In 2021, positive employment growth ranged from a high of 6% for Ireland to 0.2% for Switzerland—about three quarters of these countries—with the remainder showing declines ranging from 0.2% for Hong Kong to 3.2% for Latvia. Canada in 2021 had the second-highest employment growth of the IMF Advanced Economies.

Meanwhile, estimates for 2022 see Canada with the third-highest employment growth amongst the IMF Advanced Economies. Growth ranged from a high of 4.5% for Israel to a low of -2.2% for Singapore. **Figure 1.6D** provides an overall picture of employment growth during the pandemic years by looking at growth from 2019 to 2022 and here Canada had the 12th best performance: employment growth was 2.7% for the period. Growth ranged from a high of 8% for Luxembourg—which incidentally managed positive employment growth in each of the three pandemic years—to a low of -6.5% for Latvia, which also had negative employment growth in each of the three pandemic years. It is interesting to also note that to date, only five IMF Advanced Economies managed to grow employment in each of the three pandemic years: Andorra, Luxembourg, Malta, New Zealand, and Switzerland. Only four managed to lose employment in each of the three pandemic years: Estonia, Hong Kong, Latvia, and Singapore.

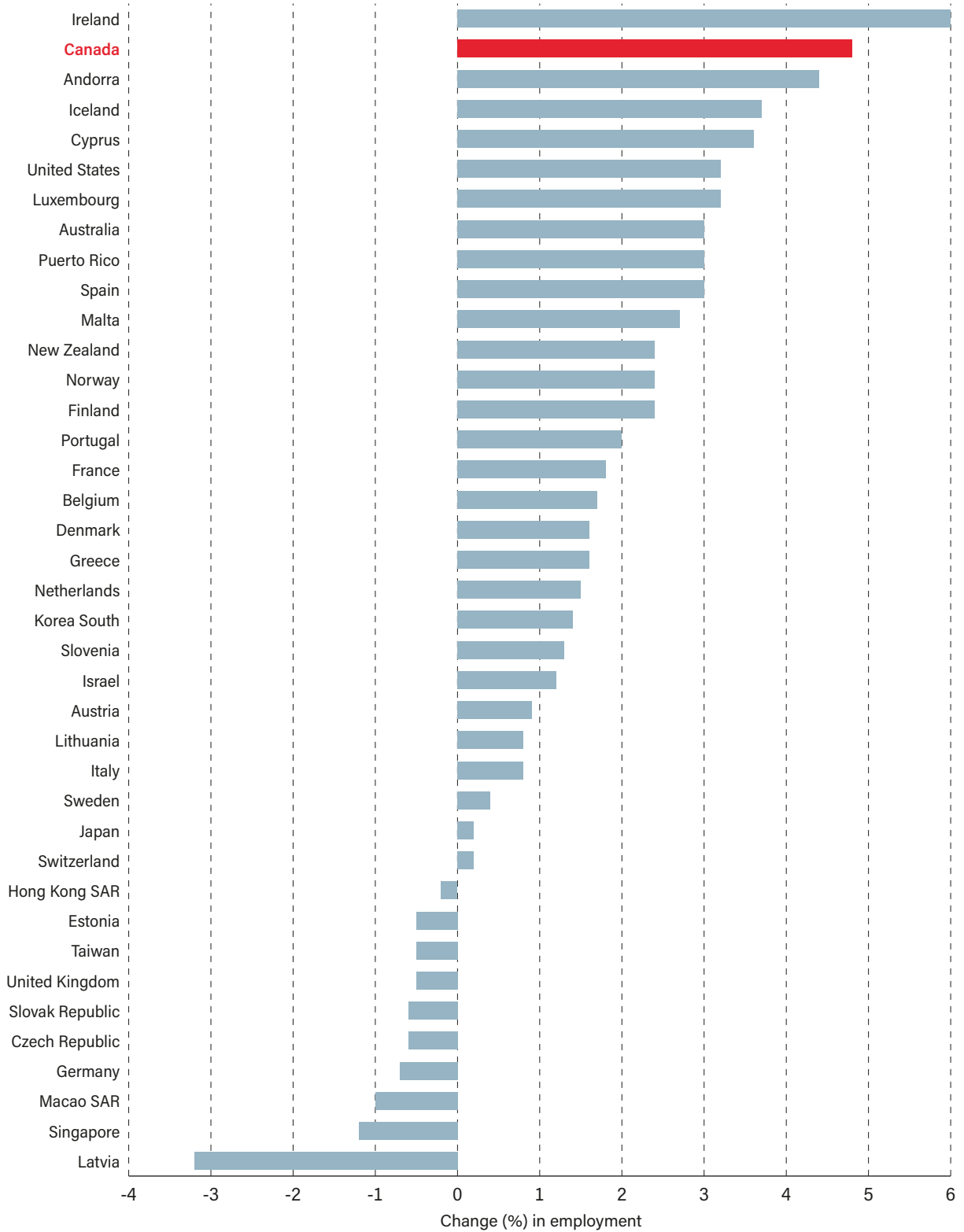
15. It is difficult to ascertain the reasons for differences in employment impacts given that they would be a combination of the severity of the pandemic, stringency measures, and the generosity of employment support measures.

Figure 1.6A: Change (%) in employment, IMF Advanced Economies, 2020



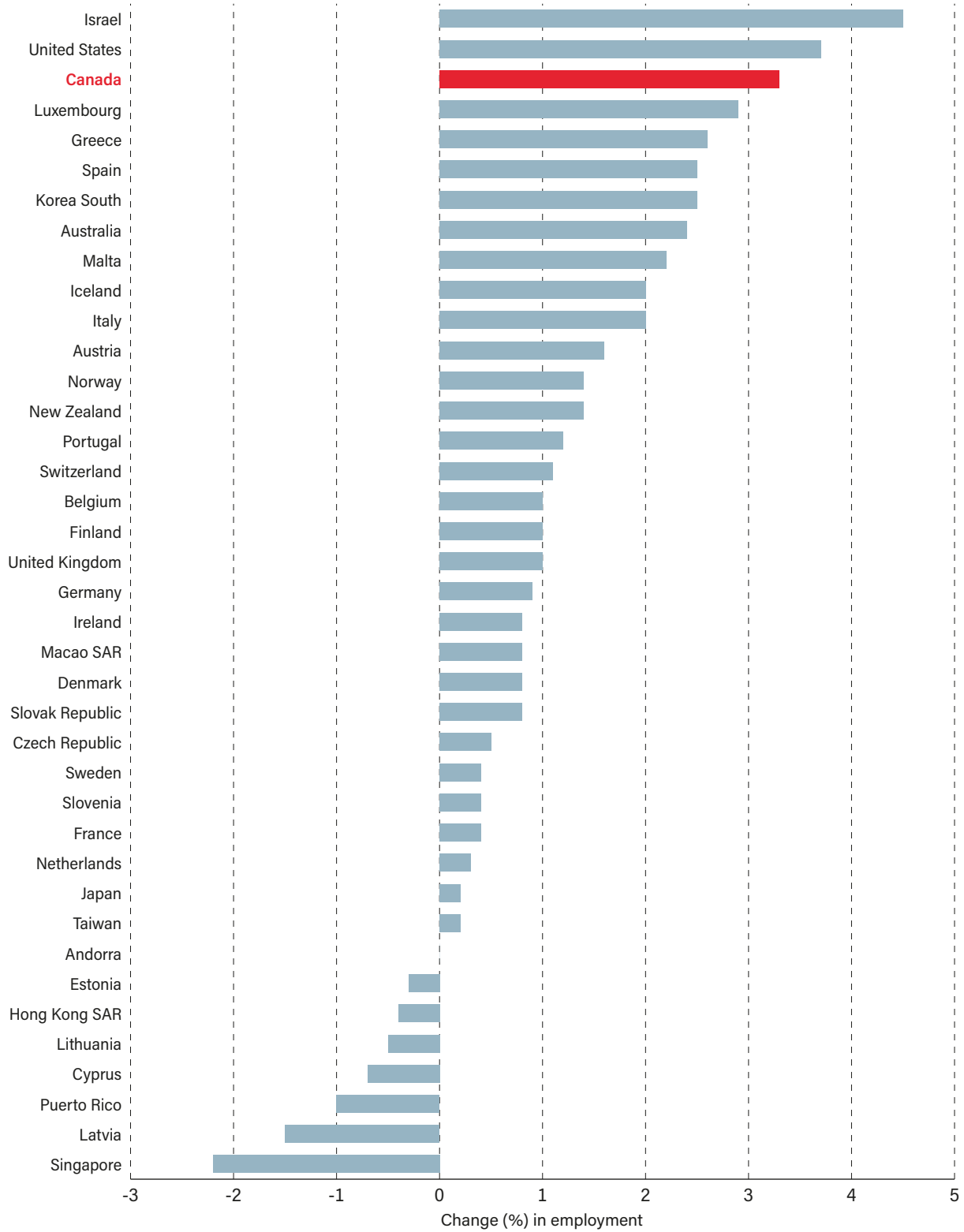
Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.6B: Change (%) in employment, IMF Advanced Economies, 2021



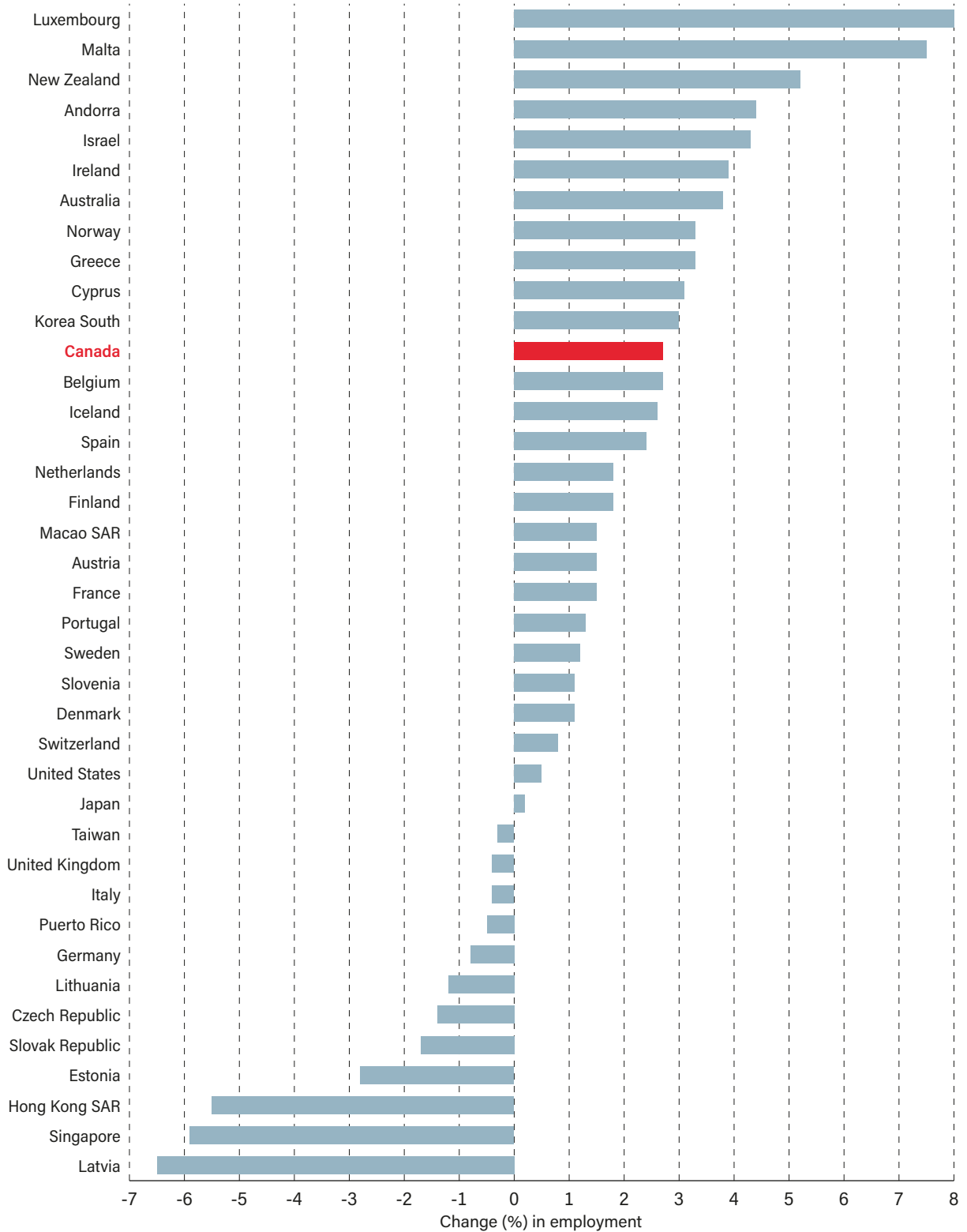
Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.6C: Estimated change (%) in employment, IMF Advanced Economies, 2022



Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.6D: Change (%) in employment, IMF Advanced Economies, 2019-2022



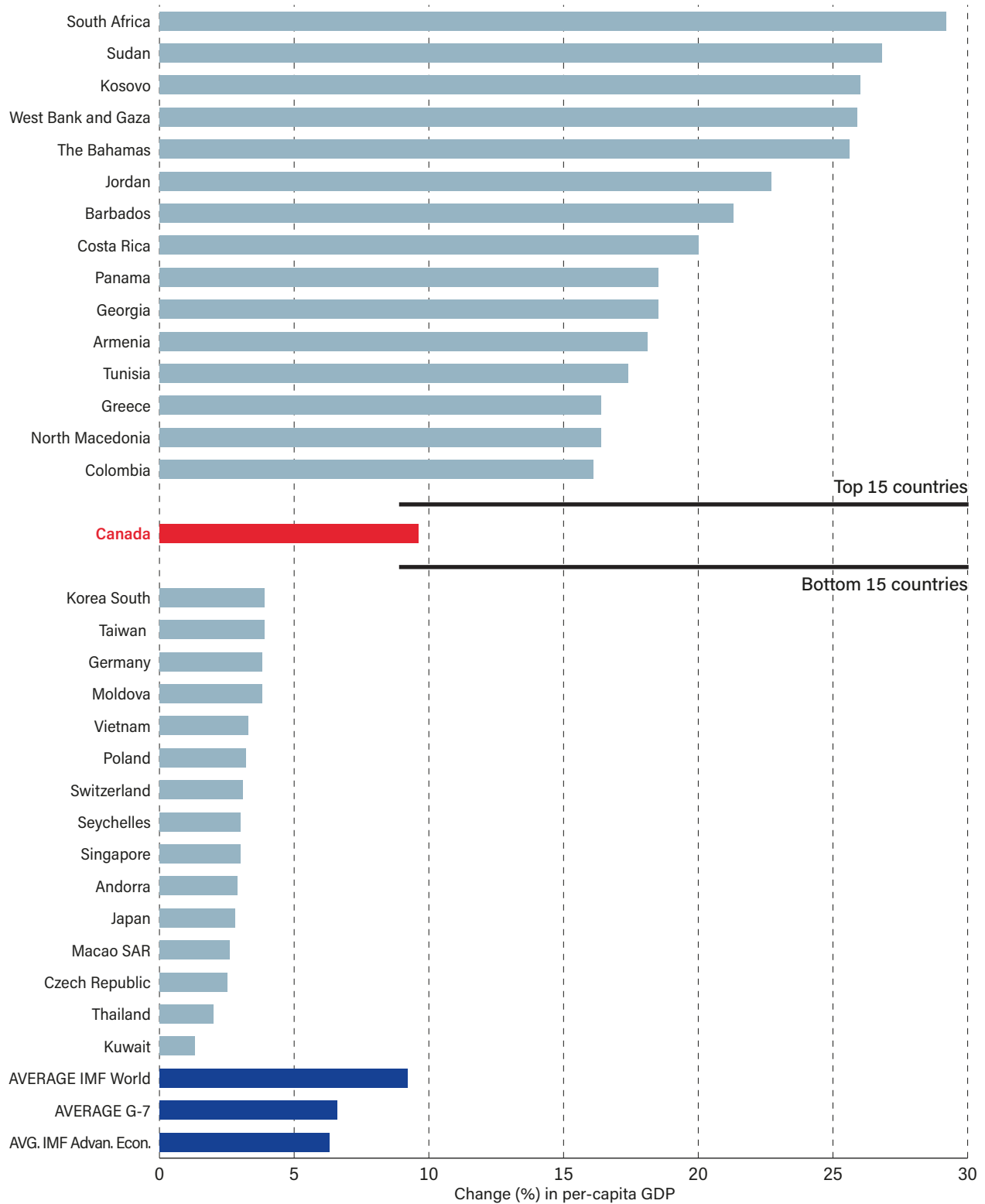
Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.7A and figure 1.7B present rankings on unemployment rates in 2020 and the percentage point change in unemployment rates from 2019 to 2022 for a somewhat larger set of countries.¹⁶ **Figure 1.7A** presents the unemployment rate in 2020, the first pandemic year, for the top-15 and bottom-15 economies out of the 109 available from the IMF's *World Economic Outlook*, plus comparisons including Canada, the world average (based on 109 countries), the G7, and the IMF Advanced Economies. Unemployment rates ranked highest in South Africa (29%), Sudan (27%), and Kosovo (26%). The lowest rate was 1.3% for Kuwait. Canada's unemployment rate in 2020 of 9.6% was higher than the world average (9.2%), the G7 average (6.6%), and the average of the IMF Advanced Economies (6.3%). When the percentage-point change in the unemployment rate from 2019 to 2022¹⁷ is calculated and ranked for the IMF advanced economies (**figure 1.7B**), the largest percentage-point decline was for Greece, which saw its rate in 2019 at 17.3%; by 2022 the rate had declined to 12.9%, a 4.5 percentage-point decline in the unemployment rate. However, well over half of IMF Advanced Economies were expected to have higher unemployment rates in 2022 than in 2019. Latvia, Estonia, and Hong Kong were the worst performers with unemployment rates 1.8, 2.7, and 2.8 percentage points higher than the year prior to the pandemic. Canada is in the middle of the pack in this ranking at 0.14 percentage points.

16. Employment level was available mainly for the IMF Advanced Economies. The unemployment rate was available for many more countries, a total of 109.

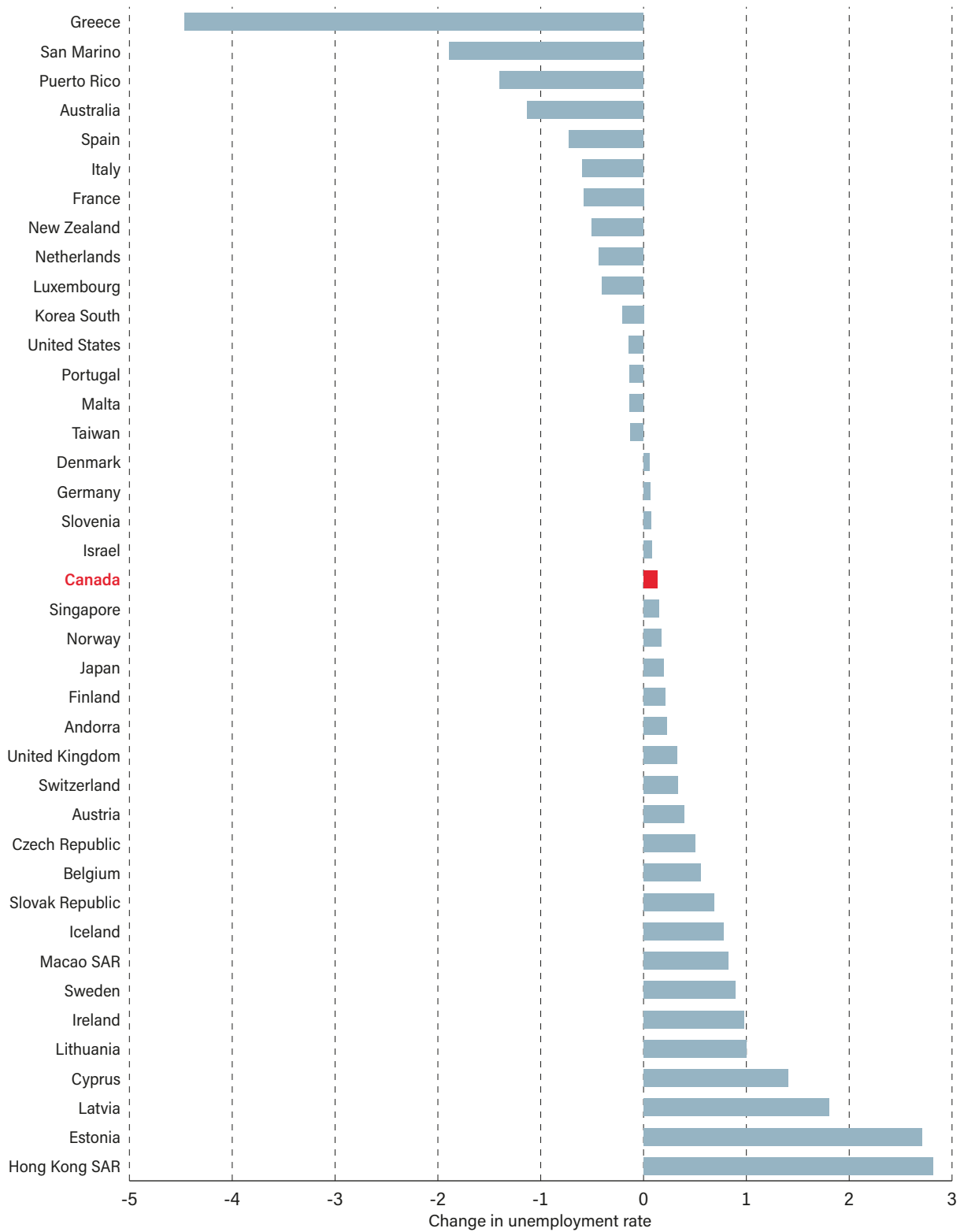
17. Again, it should be noted that 2022 is only the unemployment rate estimate available as of April 2022.

Figure 1.7A: Unemployment rate (%), top-15 and bottom-15 economies of the 109 from the IMF's *World Economic Outlook*, plus Canada and averages for world, G7, and IMF Advanced Economies, 2020



Sources: International Monetary Fund, 2022a, 2022b.

Figure 1.7B: Percentage-point change in unemployment rate, IMF Advanced Economies, 2019–2022



Sources: International Monetary Fund, 2022a; 2022b.

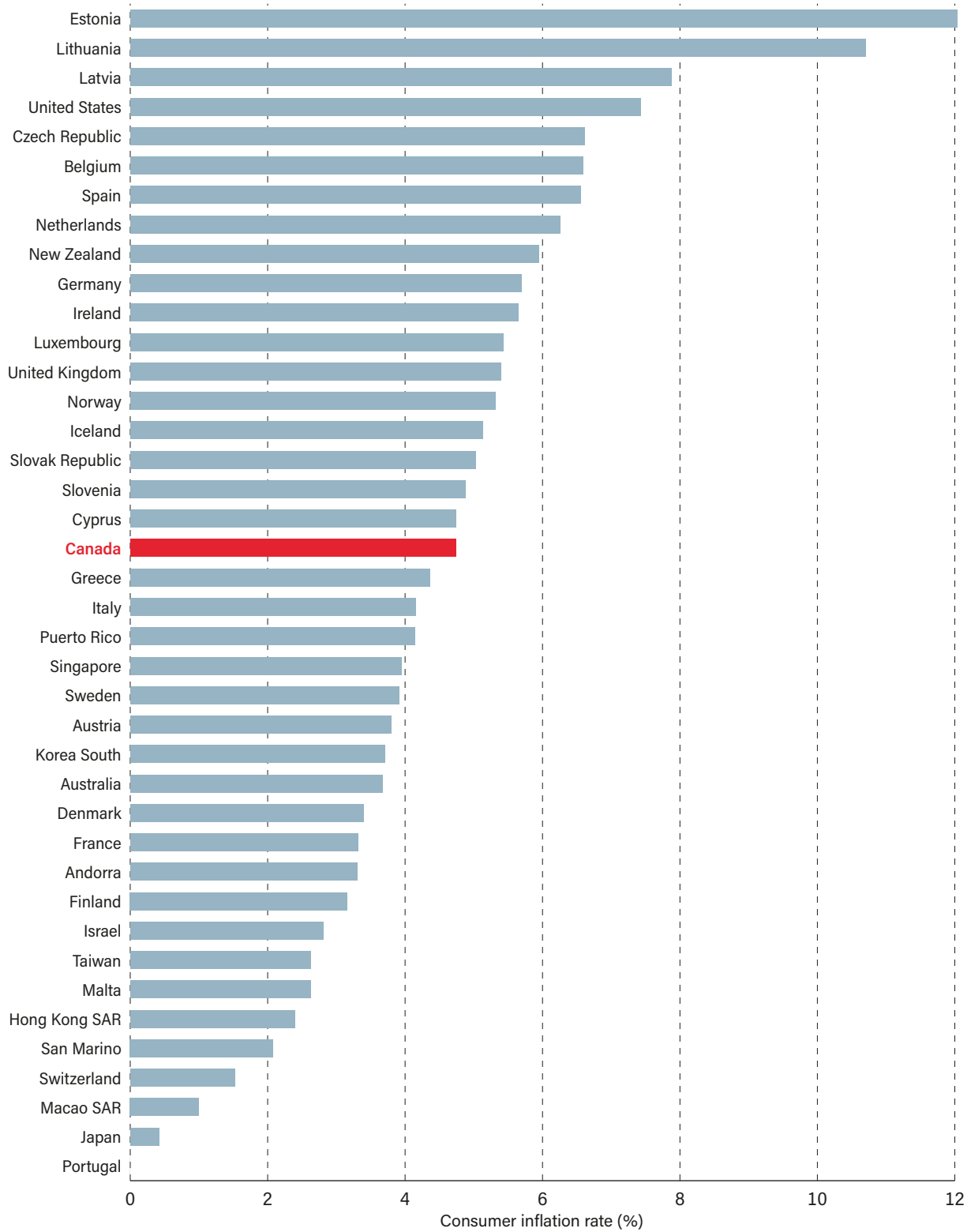
Inflation and housing prices

The global disruption of supply chains combined with rising demand as well as the effects of monetary and fiscal stimulus on demand eventually came together during the pandemic to start an inflationary process that accelerated in 2022 but was already noticeable in 2021. The contribution of assorted factors to inflation across countries is of interest especially with respect to the effects of fiscal stimulus on demand factors. One report comparing eight OECD countries including Canada found that approximately half of inflation in Canada in late 2021 and early 2022 appears to have been driven by demand-side factors, a proportion much higher than that found in many of the comparator countries (OECD, 2022a: 20).

Figure 1.8 presents the estimated consumer inflation rate for the IMF Advanced Economies in 2021. Inflation ranged from highs of 12%, 11%, and 8% for Lithuania, Latvia, and the United States to lows of 1% or lower for Macao, Japan, and Portugal. According to the IMF inflation estimates for 2021, Canada was mid-ranked (19th highest) amongst the IMF Advanced Economies for inflation, coming in at about 4.7%. Inflation is a rapidly evolving issue in 2022 and the latest numbers illustrate that it has become much more entrenched and pervasive and has resulted in increases in interest rates by central banks around the world. As of May 2022, the year-on-year total inflation rate in the OECD countries was 9.65%. In the G7 countries, inflation was as follows: Japan, 2.5%; France, 5.2%; Italy, 6.8%; Canada, 7.7%; United Kingdom, 7.9%; Germany, 7.9%; and the United States, 9.7% (OECD, 2022b). These rates are in marked contrast to past inflation rates in these countries that were largely in the 1% to 3% range for much of the previous two decades.

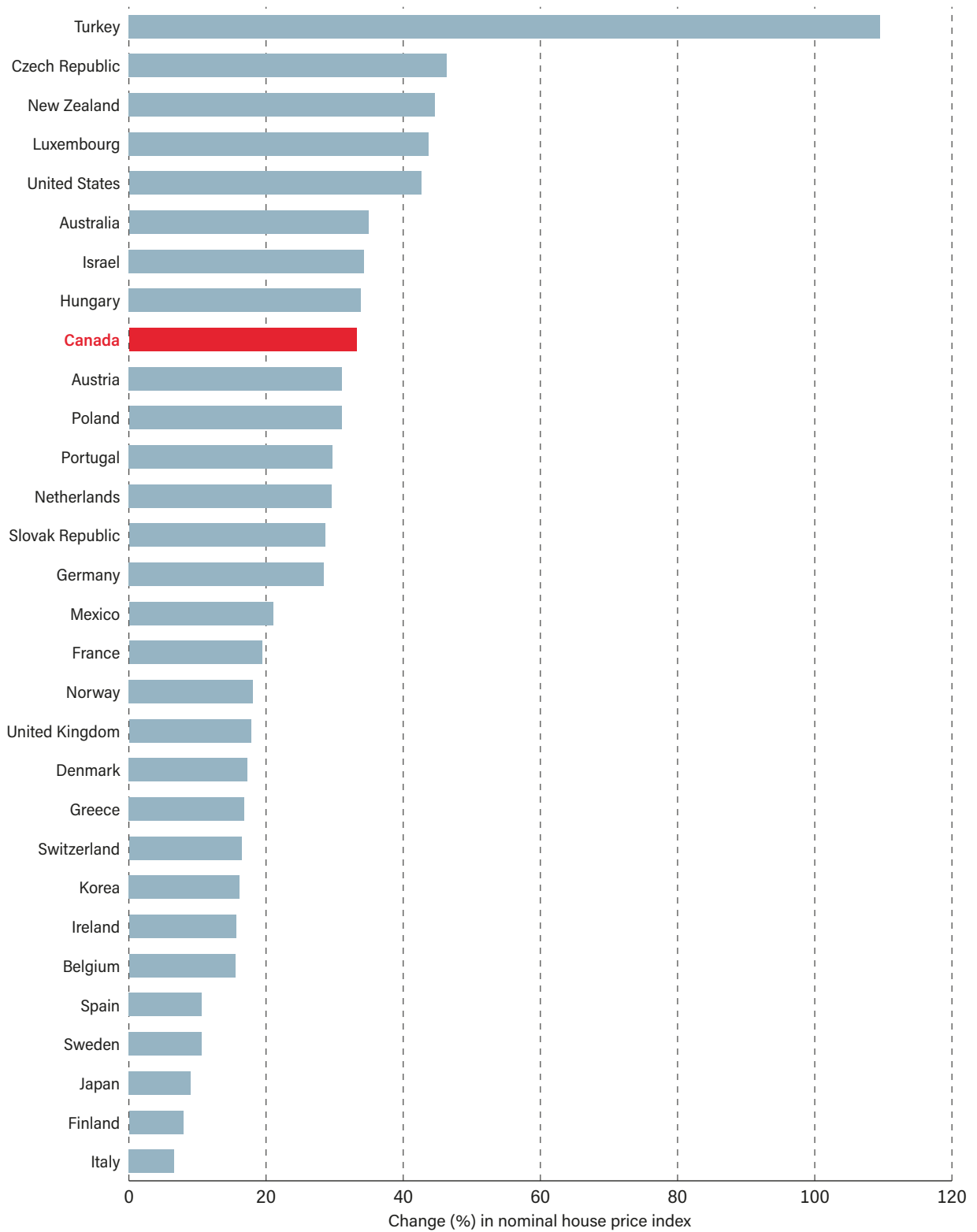
Nowhere has inflation taken a greater toll than upon housing prices and rents, which saw a surge in demand in countries around the world as the limitations of pandemic life and lockdowns created a desire for more private space (Krugman, 2022). **Figure 1.9A** and **figure 1.9B** show the percentage change in nominal house prices and rents using data for major OECD countries during the pandemic, from the fourth quarter of 2019 to approximately the fourth quarter of 2021 (OECD, 2022c). The increase in nominal house prices for the 30 countries here ranged from a high of 109.5% for Turkey to a low of 6.6% for Italy. At 33%, Canada ranked 9th out of these 30 countries for the size of the increase in housing prices. Meanwhile, rents also went up but not as dramatically as housing prices with all countries seeing an increase except Australia. For those countries that saw an increase, they ranged from a high of 38.5% in Turkey to a low of 0.1% in Japan, with Canada in 11th place at 7.1%.

Figure 1.8: Consumer inflation rate (%), IMF Advanced Economies, 2021



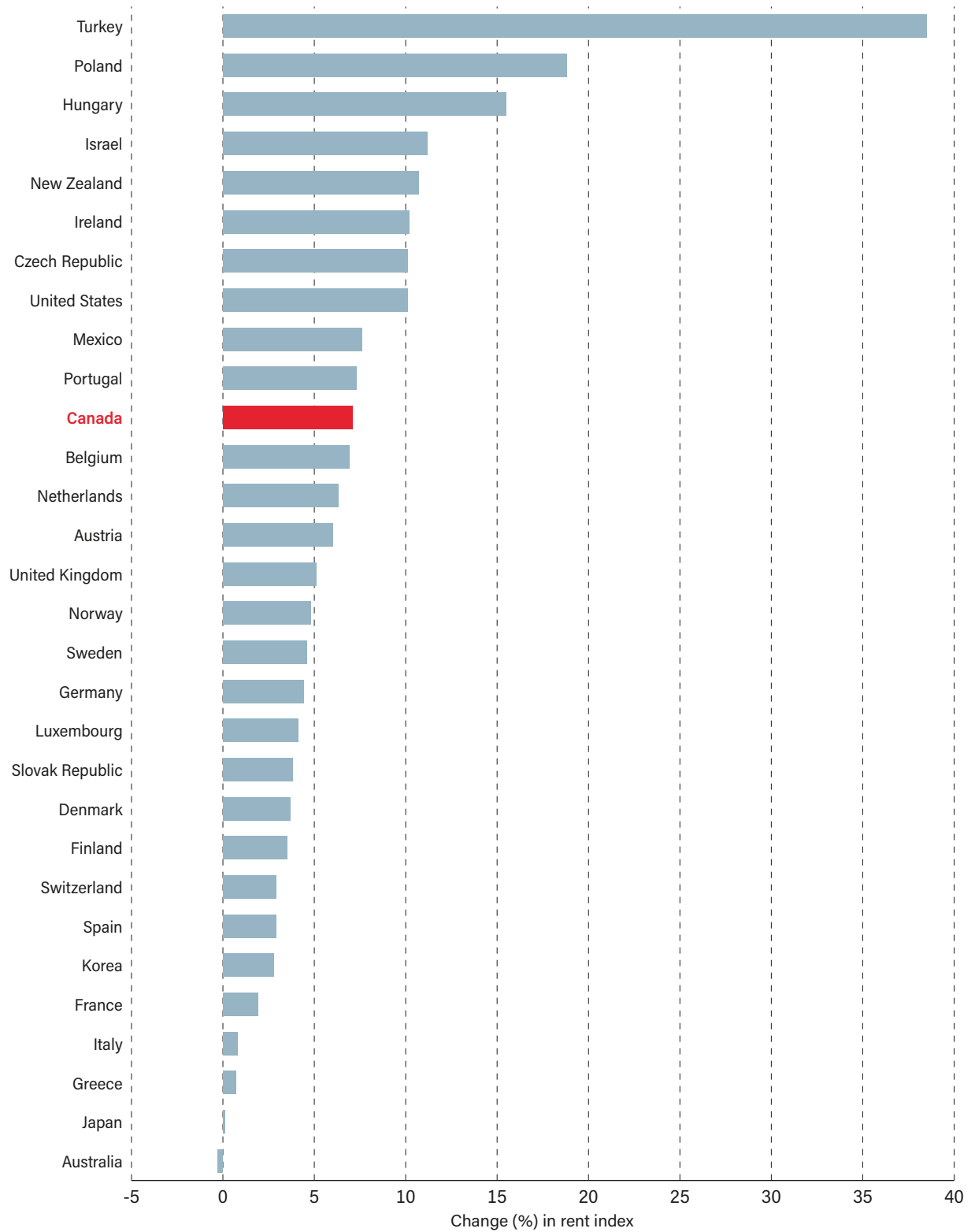
Sources: International Monetary Fund, 2022a; 2022b.

Figure 1.9A: Change (%) in nominal house price index during pandemic, major OECD countries



Source: OECD, 2022b.

Figure 1.9B: Change (%) in rent index during pandemic, major OECD countries



Source: OECD, 2022^b.

Conclusion

The health and economic impacts of the COVID-19 pandemic internationally and in Canada are expected to remain for years to come. In assessing Canada's performance within the broader global community, the most appropriate comparisons are ultimately with countries at similar levels of income and development, the IMF Advanced Economies. By June of 2022, for COVID-19 cases per million population Canada performed remarkably well as the fourth lowest in the IMF Advanced Economies. This performance extended somewhat to deaths per million population from COVID-19 as, of 38 IMF Advanced Economies, Canada was 27th. However, for crude mortality rate Canada did not fare very well, coming in as the second highest in this list of 38 IMF Advanced Economies. The main reason for this is that, during the first wave of the pandemic, Canada did particularly poorly in protecting the elderly in its long-term care facilities.

In dealing with the pandemic, Canada had the third-highest stringency value, behind Italy and Greece, while the lowest average values were for Iceland, Macao, and Taiwan. As countries with fewer hospital beds per capita generally had more intensive stringency measures, it should be noted that Canada ranked 37th out of 40 IMF Advanced Economies for hospital beds per capita. Meanwhile, Canada also ranked near the bottom of the IMF Advanced Economies for testing rates, though it had the 7th highest vaccine uptake rate of these advanced economies. Thus, overall Canada had a performance that was good in terms of controlling COVID-19 incidence and vaccine uptake but also accompanied by poorer performance in testing and crude mortality rates.

With average real per-capita GDP growth of 1.8% from 2019 to 2022, the average economic performance of the IMF Advanced Economies was generally better than the world as a whole, as well as the G-7 at 0.3% and 0.7%, respectively. Canada's real per-capita GDP growth at minus 0.1% ranked 29th out of 40 economies. There was a weak correlation between real per-capita GDP growth during the pandemic and average stringency, with higher stringency associated with lower growth. Canada during the first pandemic year had the second worst drop in employment of the IMF Advanced Economies, coming in just ahead of the United States at -5.1%. However, Canada in 2021 had the second highest employment growth of the IMF Advanced Economies and in 2022, the third highest. As well, according to the IMF inflation estimates for 2021, Canada was mid-ranked amongst the IMF economies for inflation. However, Canada was in the top 10 OECD countries for increases in the price of housing. The steepness of the housing-price increases in Canada during the pandemic era relative to other advanced countries is indeed remarkable given the anemic performance of its real per-capita GDP growth.

In trying to put the pandemic behind us, it is not yet clear whether world governments have learned any clear lessons about how to deal with either a resurgence of COVID-19 or a new pandemic while minimizing disruption to the economy. The policy implications of these results suggest that there was ultimately no one-size-fits-all successful pandemic response, and all countries appear to have a fair degree of variation in their performance. In the case of Canada, on average it did some things well such as mitigating the impact of COVID especially via high vaccine uptake, but crude mortality rates as well as performance in the long-term care sector suggest room for improvement. In addition, Canada's success in aspects of dealing with COVID appears to have come at an exceptionally high price shown, particularly, in negative short-term employment effects. The longer-term economic effects, particularly in areas such as housing prices and inflation in general, will need to be studied further. More important in hindsight will be a critical analysis of things where countries did not do as well. Again, in Canada's case, its weaker performance with respect to its higher overall crude mortality rates as well as the mortality toll in its long-term care sector needs to be carefully reviewed.

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Chapter 2

The Fiscal Effects of COVID-19 in Canada and the World

Introduction

As we saw in chapter 1, the economic and fiscal disruption of the pandemic has been enormous. The rebound from the disruption has been more pronounced in the advanced economies, while the developing world has lagged behind. Moreover, the rebound has been accompanied by continued disruption of supply chains, inflation, and large public-sector deficits designed to provide economic support as well as deal with the health effects of COVID-19. There is in addition the complicating effects on the world economy of the war in Ukraine and regional upsurges in COVID and other respiratory ailments.

As government revenues dropped and pandemic-related spending soared, large deficits were incurred. Many countries introduced substantial fiscal packages encompassing assorted direct support for household income, loans, guarantees, tax deferrals, and other supports along with increased public-health spending to combat the pandemic (OECD, 2020). With the initial fall in economic activity and tax revenues, the spending was financed by an expansion of government borrowing and, ultimately, public debt. However, even as economies recovered, deficits persisted.

Globally, the IMF has estimated that in 2020 world governments around the world ran a negative general government fiscal balance of 10.2%. This is dramatically larger than the earlier negative fiscal balances of 3.0% and 3.6% in 2018 and 2019. In 2021, the fiscal balance was forecast to decline to 7.9% and, in 2022, to 5.2%, still dramatically larger than in 2018 and 2019. Relative to the emerging market economies as well as the world overall, the advanced economies saw larger deficits of 10.8% and 8.8% for 2020 and 2021. The global ratio of gross debt to GDP rose from 84.1% in 2019 to 99.8% in 2020 but declined somewhat to 95.7 in 2021. However, the advanced economies went from 105.3% in 2019 to 124.6% in 2020 and are estimated to have declined only to 119.5% in 2021 (IMF, 2022d).

Canada was not immune to the economic and fiscal impact of the pandemic. According to the IMF, Canada in 2020 saw its estimated real GDP shrink 5.2% with projected growth of 4.7% for 2021 and 3.6% for 2022, now revised downward to 3.3% for 2021 and 1.5% for 2022 (IMF, 2022c; IMF, 2022d). The first wave of the pandemic had the most severe impact on Canada's GDP, in the face of uncertainty about the pandemic's lethality and spread and the assorted measures that shut down much of the economy in an effort to contain the spread in the absence of either vaccines or immunity. The economy subsequently recovered as it adapted to the new realities of pandemic life and subsequent waves of the pandemic did not disrupt GDP as seriously as the first wave.

Nevertheless, the last two years have seen the economic recovery proceed in fits and starts with late 2021 and early 2022 finally seeing evidence of the economy returning to full employment. As well, according to the IMF, Canada initially saw a negative fiscal balance of 10.9% in 2020 from a balance of close to zero in 2019. The fiscal balance for 2020 was later revised to 11.4% with a forecast 7.5% in 2021 and 2.2% in 2022, both later also revised to 4.7% and 2.1% (IMF, 2021).

This chapter on the fiscal aspects of the pandemic in Canada and the world surveys several fiscal indicators that puts Canada's response and performance into international perspective, particularly in comparison with those advanced economies as defined by the International Monetary Fund (IMF) and for which data are available. The fiscal data are from the IMF World Economic Outlook Database (April 2022) while the COVID-19 data come from Our World in Data (Mathieu *et al.*, 2022).

Fiscal Impact of the Pandemic

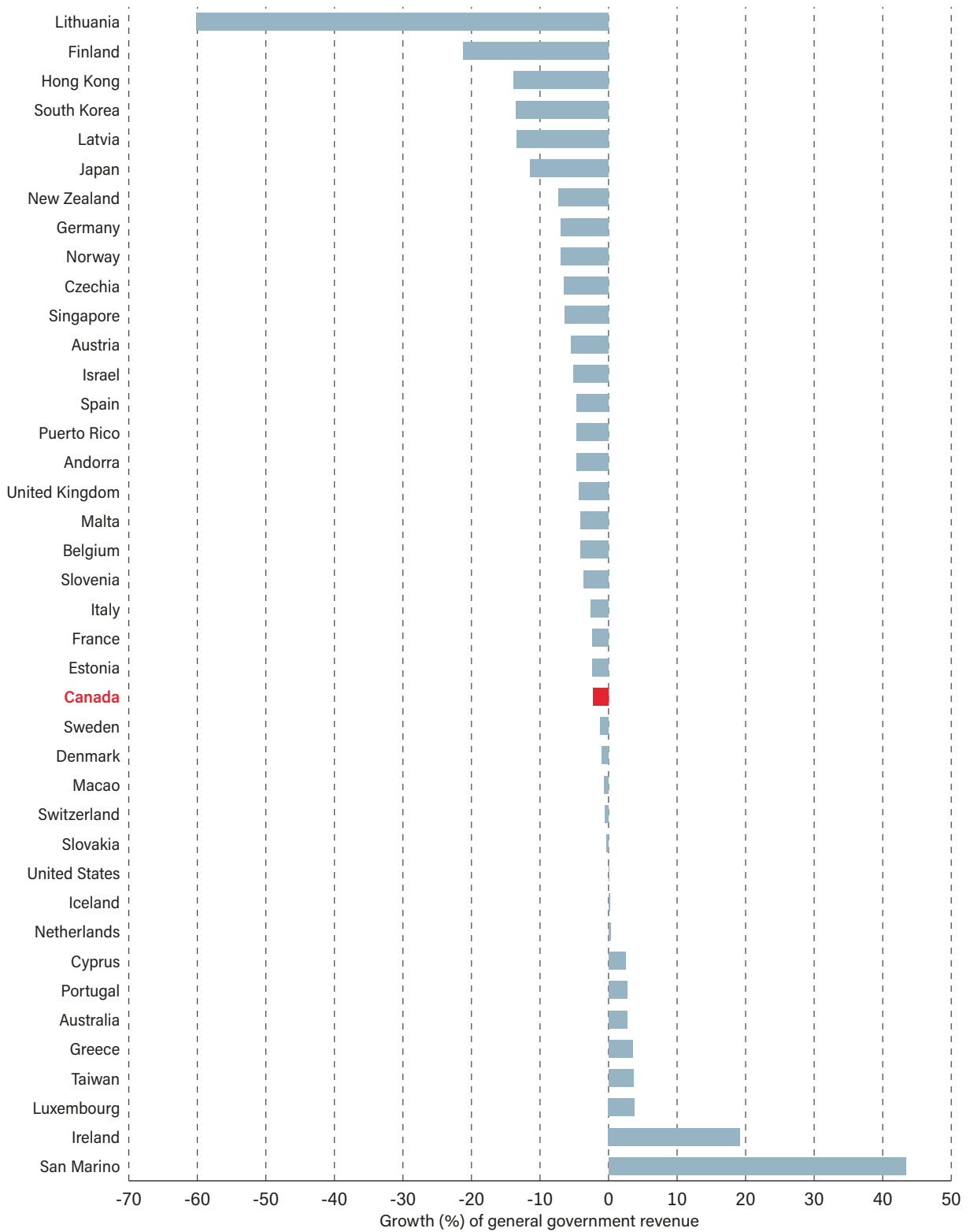
The general effects of the pandemic were to disrupt health, social, governmental, and economic systems. The effect of these disruptions on Canada and the world was similar but, given the regional variations in demographics, timing of the spread and response, and other characteristics, one expects differences in the impact both at points in time and over time. Indeed, other studies have noted regional variations. For example, in Spain, one study of the first wave of the pandemic found that 90% of the variation of the pandemic's health impact was attributable to differences between regions (Gutiérrez, Inguanzo, and Orbe, 2021). These differences could then also spread into economic impacts as noted for the United States by a study on the employment impacts of the pandemic by economic region and sector (Foerster, Garvey, and Sarte, 2021). As a result, one might expect that fiscal impacts from the pandemic would also exhibit some regional differences not only within countries but also across countries. The indicators here are from the IMF's *World Economic Outlook* database and the rankings across the IMF Advanced Economies are for as many as 40 countries though sometimes fewer depending on the indicator's availability.

Revenues

Figures 2.1A to 2.1C document the impact of the pandemic on government revenues. While many governments saw declines in government revenue during the first year of the pandemic as economies locked down and activity slowed, in the end there was no revenue apocalypse as 2021 and 2022 saw large economic rebounds. In 2020, 123 out of 194 IMF member countries saw a drop in general government revenue with the remainder seeing an increase. The 15 largest declines ranged from 61% for Madagascar to 24% for Cabo Verde. The 15 largest increases were for Zimbabwe (697%) and Sudan (57%), with Fiji at the lower end at nearly 15%. However, given the hyperinflation present in Zimbabwe and Sudan, those nominal increases, while interesting, are not as useful for comparison, making nominal revenues to nominal GDP a better comparator. Moreover, comparing countries at approximately similar levels of economic development, such as the IMF Advanced Economies, is more useful.

Figure 2.1A plots the percentage change in general government revenue in 2020 for the IMF Advanced Economies. Given that the average percentage change globally in government revenues in 2020 was a positive at about 0.1%, the revenue drop does seem to have affected higher income countries more. Three quarters of these advanced

Figure 2.1A: Growth (%) of general government revenue, IMF Advanced Economies, 2020



Sources: International Monetary Fund, 2022a; 2022b.

economies saw their revenues drop, ranging from a 60% fall for Lithuania to a 0.3% drop for Slovakia with Canada at a 2.2% drop near the middle of the overall distribution. The remainder saw increases ranging from one tenth of one percent for the United States to 43% for San Marino.

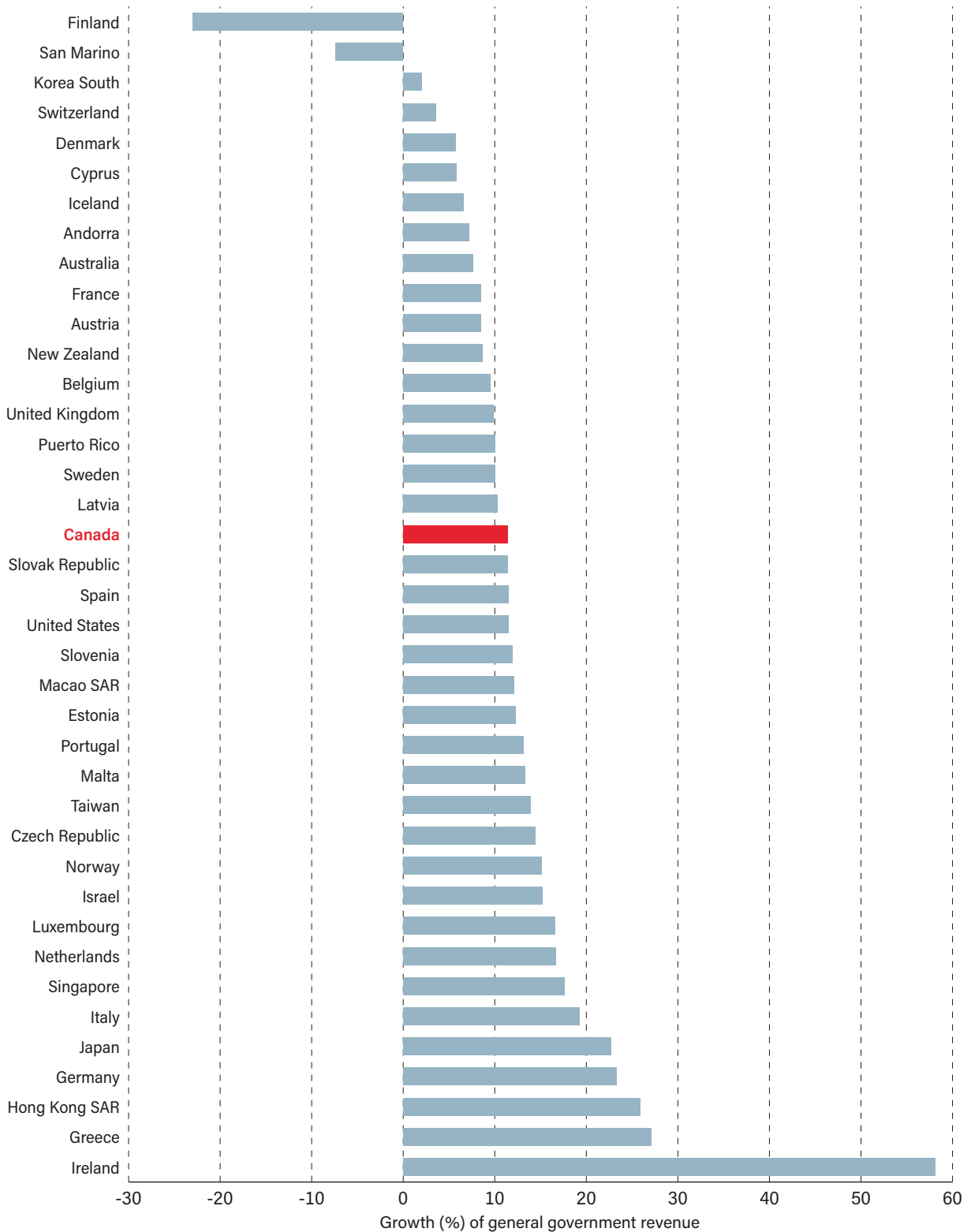
Figure 2.1B documents the revenue rebound by presenting the percentage growth of general government revenue for the year 2021 with the IMF Advanced Economies ranked by the 2021 rebound. While Finland and San Marino saw revenue drops in 2021, all the other IMF Advanced Economies as well as the BRIC countries, South Africa, and Mexico saw increases. At 11.4%, Canada ranked 18th highest of 39 IMF Advanced Economies in 2021.

Figure 2.1C plots general government revenue against GDP for the IMF Advanced Economies for 2019 and 2021 to provide a snapshot of change in revenues relative to the size of the economy over the course of the pandemic, ranking them by their revenue-to-GDP ratio in 2019. In 2019, Canada ranked 17th of 40 IMF Advanced Economies for the ratio of general government revenue to GDP. Twenty-nine of the 40 economies saw their revenue-to-GDP ratios increase from 2019 to 2021 while the remainder saw declines. Overall, Canada was approximately mid-ranked amongst these advanced economies in terms of public-sector size as measured by revenue to GDP.

Expenditures

The government expenditure side was of importance during the pandemic given the ramping up of health expenditures as well as assorted business and labour-force income supports in the face of the economic disruption brought about by the pandemic and the measures to deal with it. In a comparison based on all countries, the largest expenditure increases in 2020—the top 15—ranged from 86% for Zimbabwe to 24% for Sierra Leone. At the same time, there were also decreases and the most pronounced ranged from an 8% fall for Brunei to 39% for South Sudan. However, most countries—83%—saw an increase with the remainder seeing a decline in spending. Of 194 IMF countries, at an expenditure increase of 19.7%, Canada ranked 25th highest in the world. Canada's expenditure increase of 19.7% was well above the world average of 8.7%, the G7 average of 13.2%, and the IMF Advanced Economies average of 10.5%. Indeed, as **figure 2.2A** shows, Canada saw the 5th highest percentage increase of total government expenditure among the IMF Advanced Economies, behind Singapore, Greece, Ireland, and Luxembourg and ahead of the United States, Cyprus, and the United Kingdom.

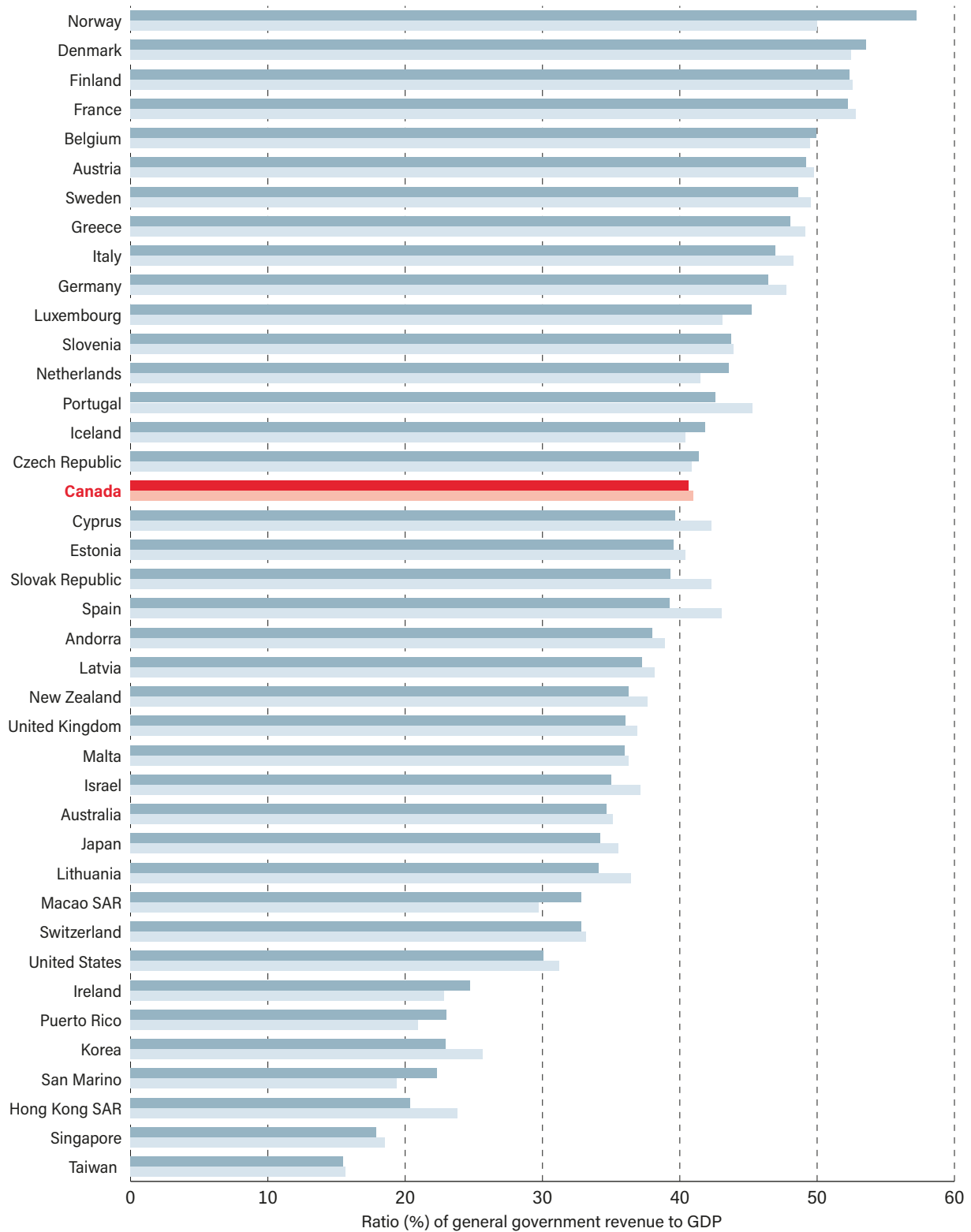
Figure 2.1B: Growth (%) of general government revenue, IMF Advanced Economies, 2021



Note: Lithuania omitted; an outlier with 363% growth, 2020–2021
 Sources: International Monetary Fund, 2022a; 2022b.

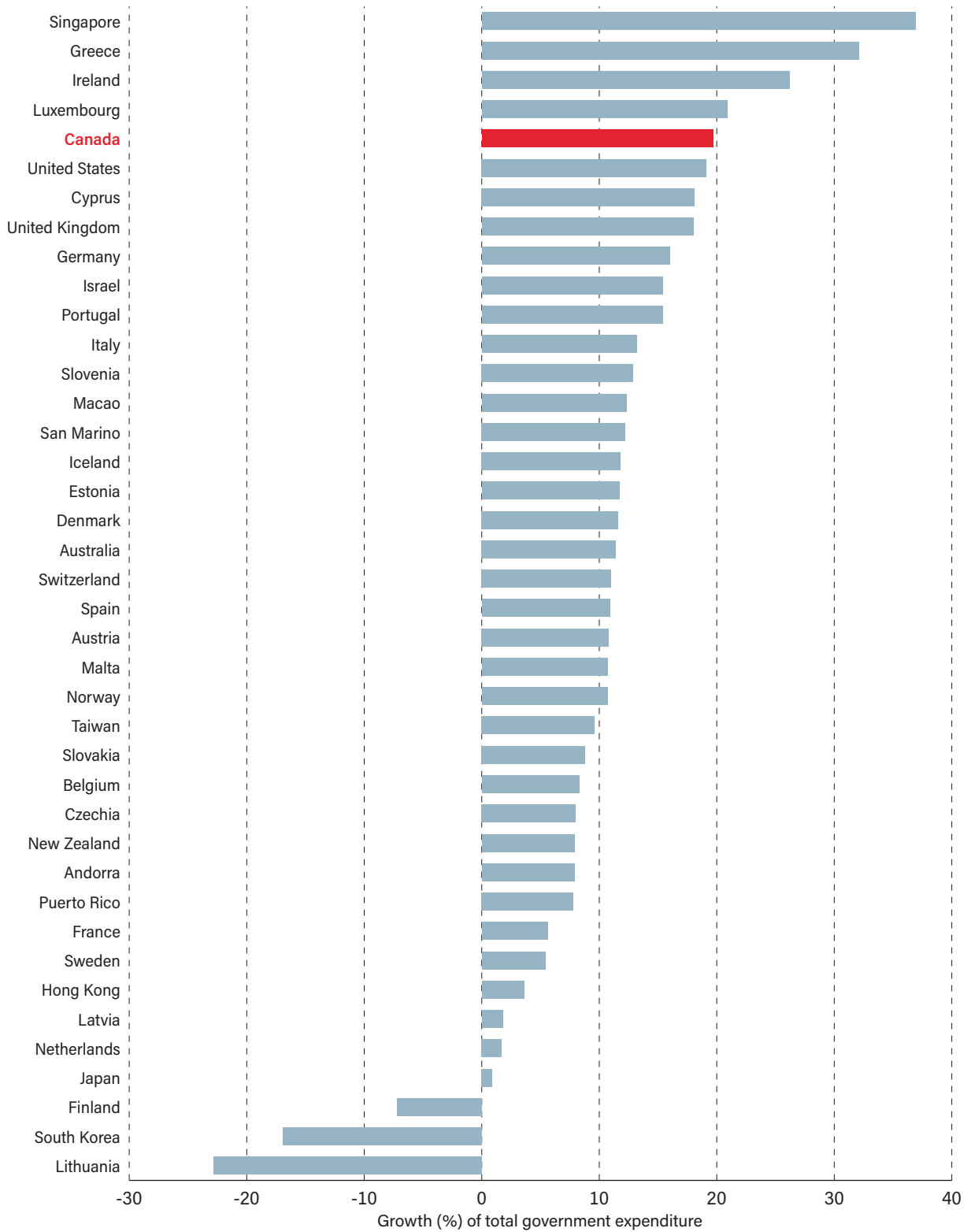
Figure 2.1C: Ratio (%) of general government revenue to GDP, IMF Advanced Economies,

■ 2019 and ■ 2021, ranked by ratio in 2019



Sources: International Monetary Fund, 2022a; 2022b.

Figure 2.2A: Growth (%) of total government expenditure, IMF Advanced Economies, 2020



Sources: International Monetary Fund, 2022a; 2022b.

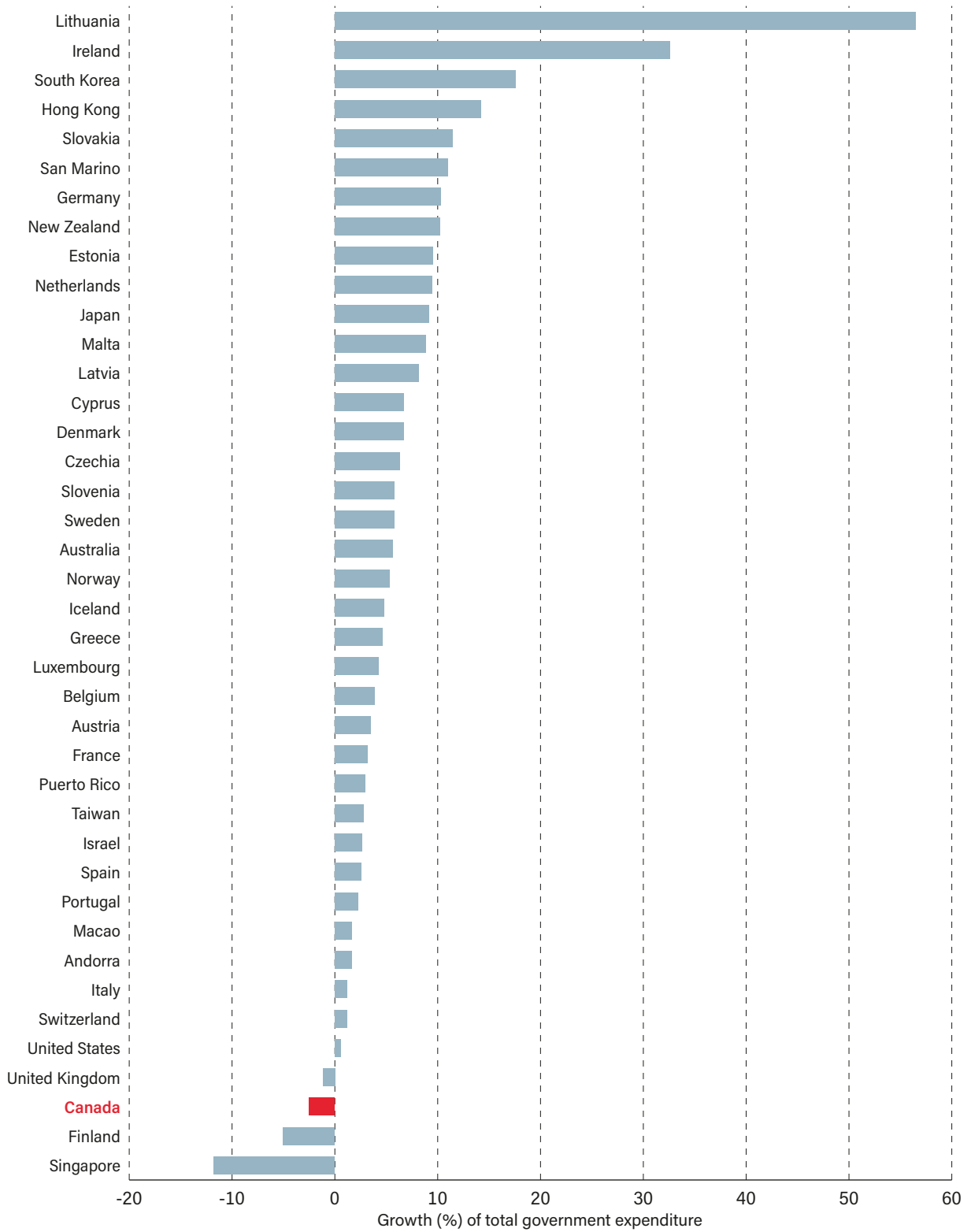
Figure 2.2B illustrates that there was little retrenchment with respect to government expenditures after 2020 as many countries continued to see large increases. Figure 2.2B plots the growth rates of total government expenditure in 2021 and shows that many countries continued to see large increases in 2021. The changes in government expenditure in 2021 ranged from a high of 57% for Lithuania to a decline of 12% for Singapore. Canada, the United States, and the United Kingdom, who had percentage government expenditure increases among the top ten largest in 2020, were all near the bottom of the IMF Advanced Economies in 2021. Canada, for example, which saw a 19.7% increase in 2020, had a 2.5% decline in 2021 though it should be noted that the IMF forecast a 6.2% increase for Canada in 2022.

Increases in expenditure have inevitably led to increases in the size of the public sector as measured by the ratio of total government expenditure to GDP. This is shown in **figure 2.2C** for the years 2019 and 2021 for the IMF Advanced Economies. In 2019, the largest ratios of government expenditure to GDP for the IMF Advanced Economies were those of France, Finland, and Belgium, while the smallest were for Macao, Taiwan, and Singapore. By 2021, the largest sectors were for France, Greece, and Austria with Finland falling to 6th place. Taiwan and Singapore remained at the bottom, having the smallest public sectors. Canada was generally midrange in both 2019 and in 2021 for expenditure to GDP, ranking 19th out of 40 in both 2019 and 2021. This was a far cry from 2020 when with an expenditure-to-GDP ratio of 53%, it ranked 10th of the 40 IMF Advanced Economies, a surge fueled by deficits that were among the largest in the IMF Advanced Economies.

Figures 2.3A and 2.3B present a look at deficits during the pandemic as measured by ratios of deficits to GDP. A deficit in 2020 was incurred by 179 out of 195 IMF countries. In 2020, Canada is estimated to have had a deficit-to-GDP ratio of 11.4%, above the IMF Advanced Economy average of 7.7%, the G7 average of 10.2%, and the world average of 6.4%. Unlike the United States, Canada's deficit-to-GDP ratio in 2020 did not place it in the top 15 countries but it did rank 23rd out of 195 countries worldwide. In **figure 2.3A**, the IMF Advanced Economies are ranked by their deficits in 2020; the top deficit-to-GDP ratios were those of San Marino (38%), Macao (21%), the United States (15%), the United Kingdom (13%), and Canada in 5th spot with 11.4%. Norway, Denmark, and South Korea managed the smallest deficit-to-GDP ratios in 2020, all coming in under 3%. Deficit-to-GDP ratios in Brazil, India, and China ranged from 11% to 13%, comparable to Canada's.

Figure 2.3B ranks the estimated average ratio (%) of the annual budgetary balance to GDP for 2020 to 2021 for the IMF Advanced Economies and finds the largest average deficits over this three-year period were for San Marina, Macao, and the United States, followed closely by the United Kingdom, Greece, and Malta. Canada had the 13th largest estimated average deficit.

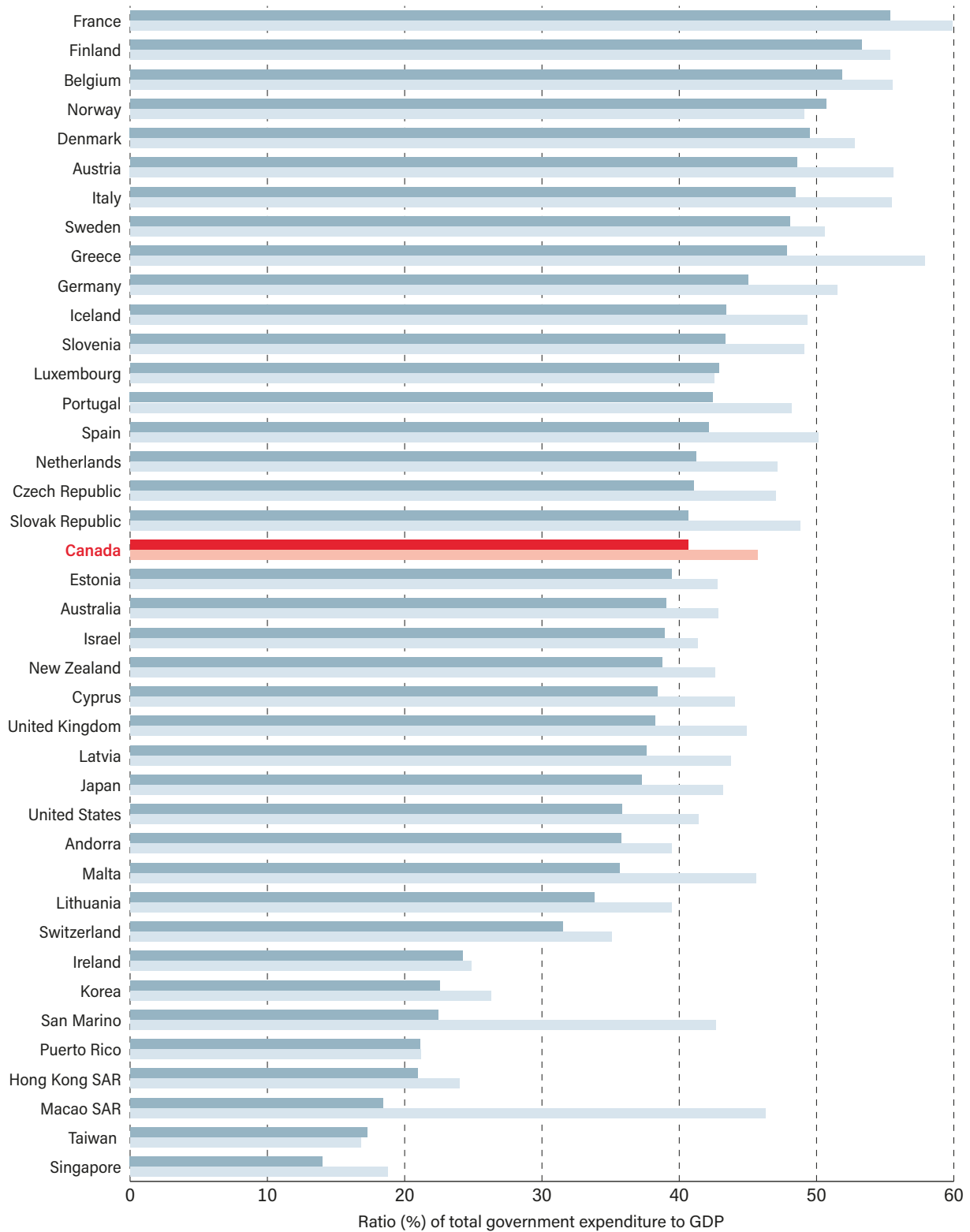
Figure 2.2B: Growth (%) of total government expenditure, IMF Advanced Economies, 2021



Sources: International Monetary Fund, 2022a; 2022b.

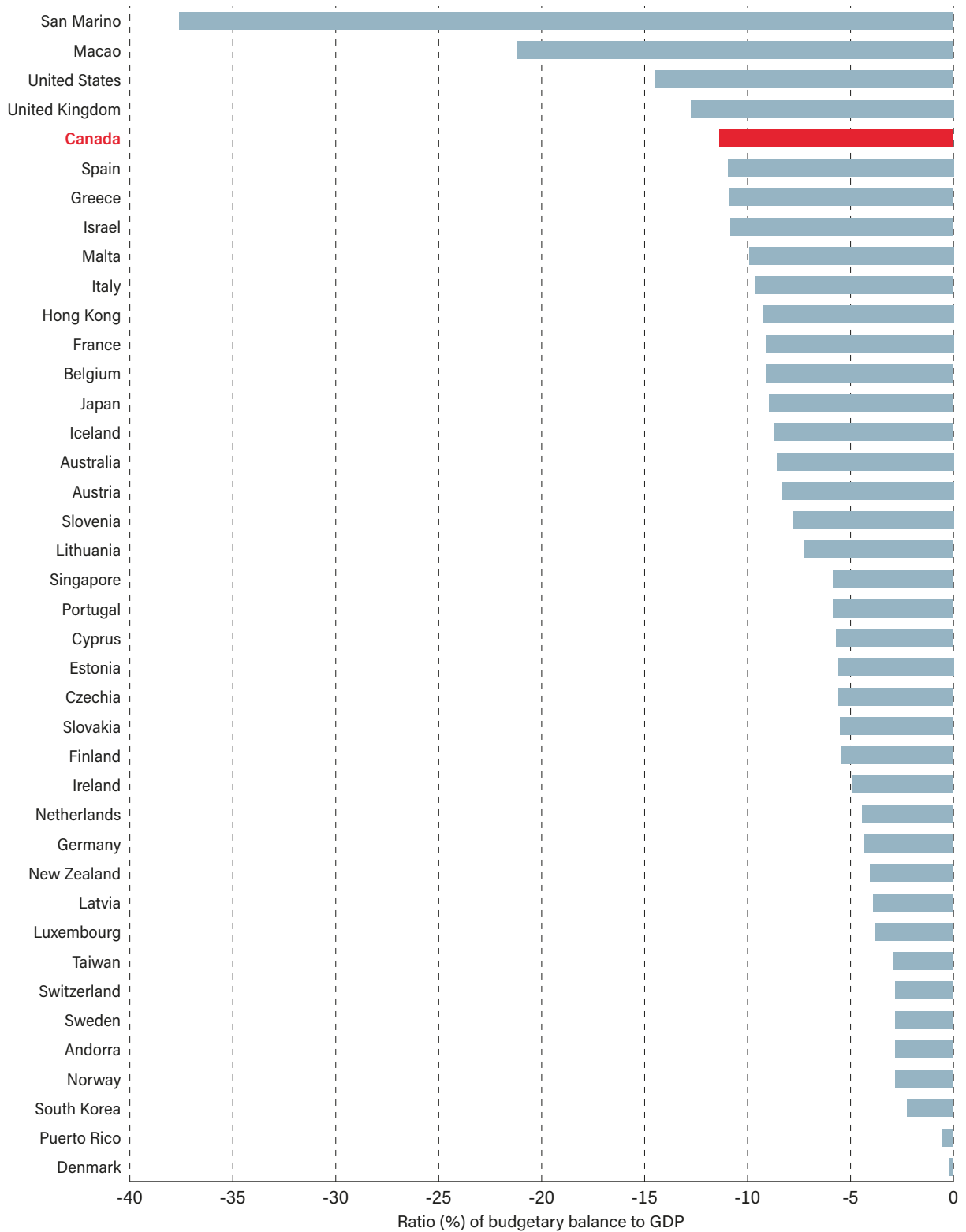
Figure 2.2C: Ratio (%) of total government expenditure to GDP, IMF Advanced Economies,

■ 2019 and ■ 2021, ranked by ratio in 2019



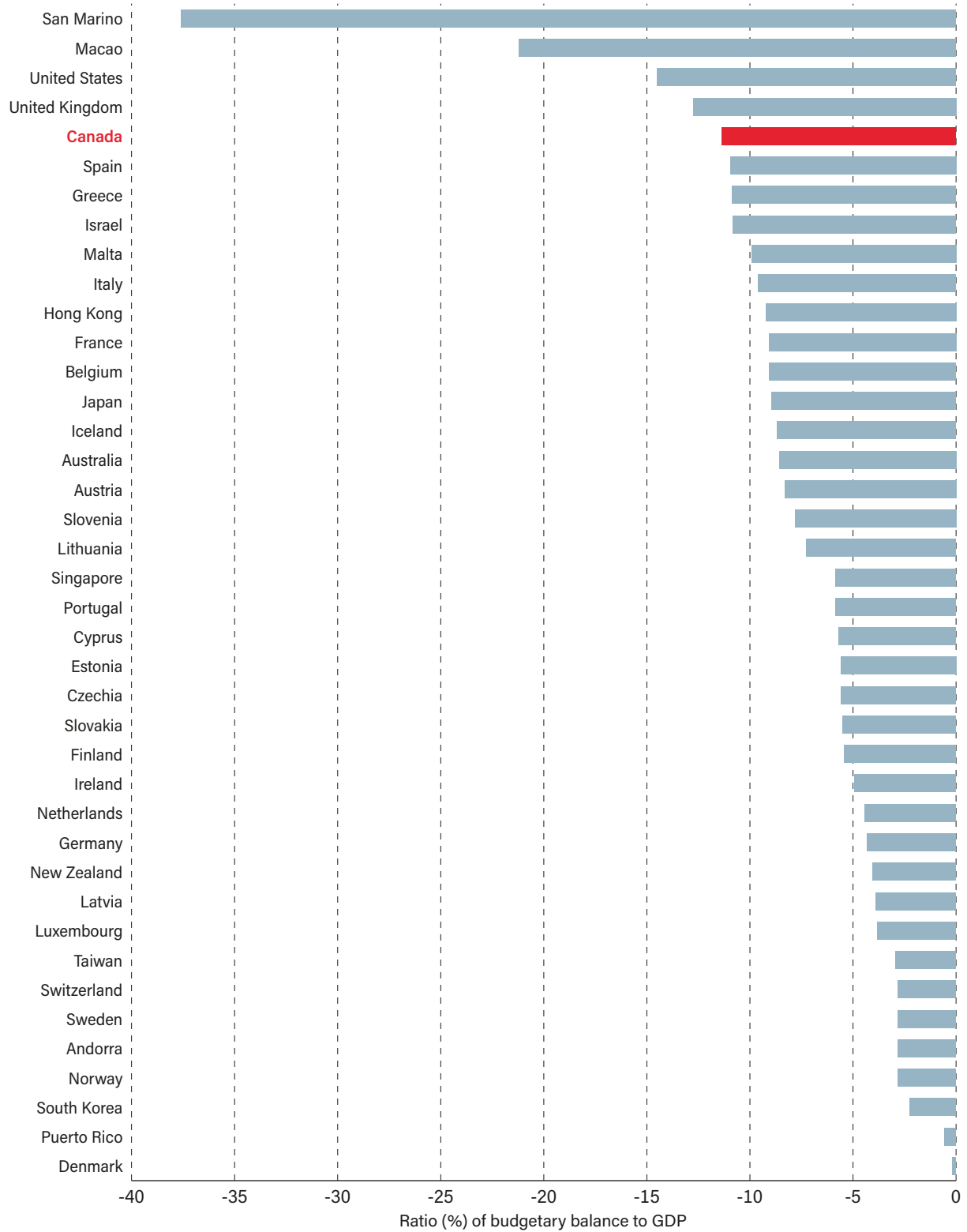
Sources: International Monetary Fund, 2022a; 2022b.

Figure 2.3A: Ratio (%) of budgetary balance to GDP, IMF Advanced Economies, 2020



Sources: International Monetary Fund, 2022b; 2022c; 2022c.

Figure 2.3B: Estimated average ratio (%) of annual budgetary balance to GDP, 2020–2021, IMF Advanced Economies



Sources: International Monetary Fund, 2022b; 2022c; 2022c.

The surge in deficit financing of course ultimately results in a greater accumulation of debt. The sum of accumulated deficits and surplus, plus any additional borrowing for capital or infrastructure projects not part of operating budgets, becomes the public debt. The gross debt is total liabilities while the net public debt is gross debt minus financial assets. Globally, from 2019 to 2021, the average gross debt-to-GDP ratio rose from 57% to 67%. All together 161 out of 196 countries saw an increase in their gross debt-to-GDP ratios from 2019 to 2021—nearly 80% of countries. Canada saw its gross debt-to-GDP ratio increase by nearly 25 percentage points from 2019 to 2021, the 15th largest increase in the world. **Figure 2.4A** plots the percentage-point increase in gross debt-to-GDP for the IMF Advanced Economies. Canada had the third largest percentage-point increase in its gross debt-to-GDP ratio of the IMF Advanced Economies between 2019 and 2021.

Finally, data on net debt were more limited but are often considered a better measure of indebtedness as net debt subtracts financial assets from gross debt. **Figure 2.4B** ranks the increase in net debt-to-GDP ratios from 2019 to 2021 for IMF Advanced Economies where data are available. The largest percentage-point increases in the net debt-to-GDP ratio ranged from 21% for Spain to 17% for Japan, with the United States between them at 18%. Taiwan, Malta, and Cyprus all saw percentage-point declines in their net debt-to-GDP ratios. Canada, with an increase of 10 percentage points in its ratio of net debt to GDP had the 11th largest increase.

It is worth noting that much of the government debt accumulated by Canada during the pandemic was incurred by the federal government rather than the provincial governments. As the Canadian economy recovered, the ratios of net debt to GDP at the federal and provincial levels diverged rather dramatically. While provincial net debt rose throughout the pandemic, the accumulation was somewhat slower than the nominal growth rate of GDP whereas federal debt grew much faster (Di Matteo, 2022: 29).

Figure 2.4A: Percentage-point change in ratio of gross debt to GDP, 2019–2021, IMF Advanced Economies

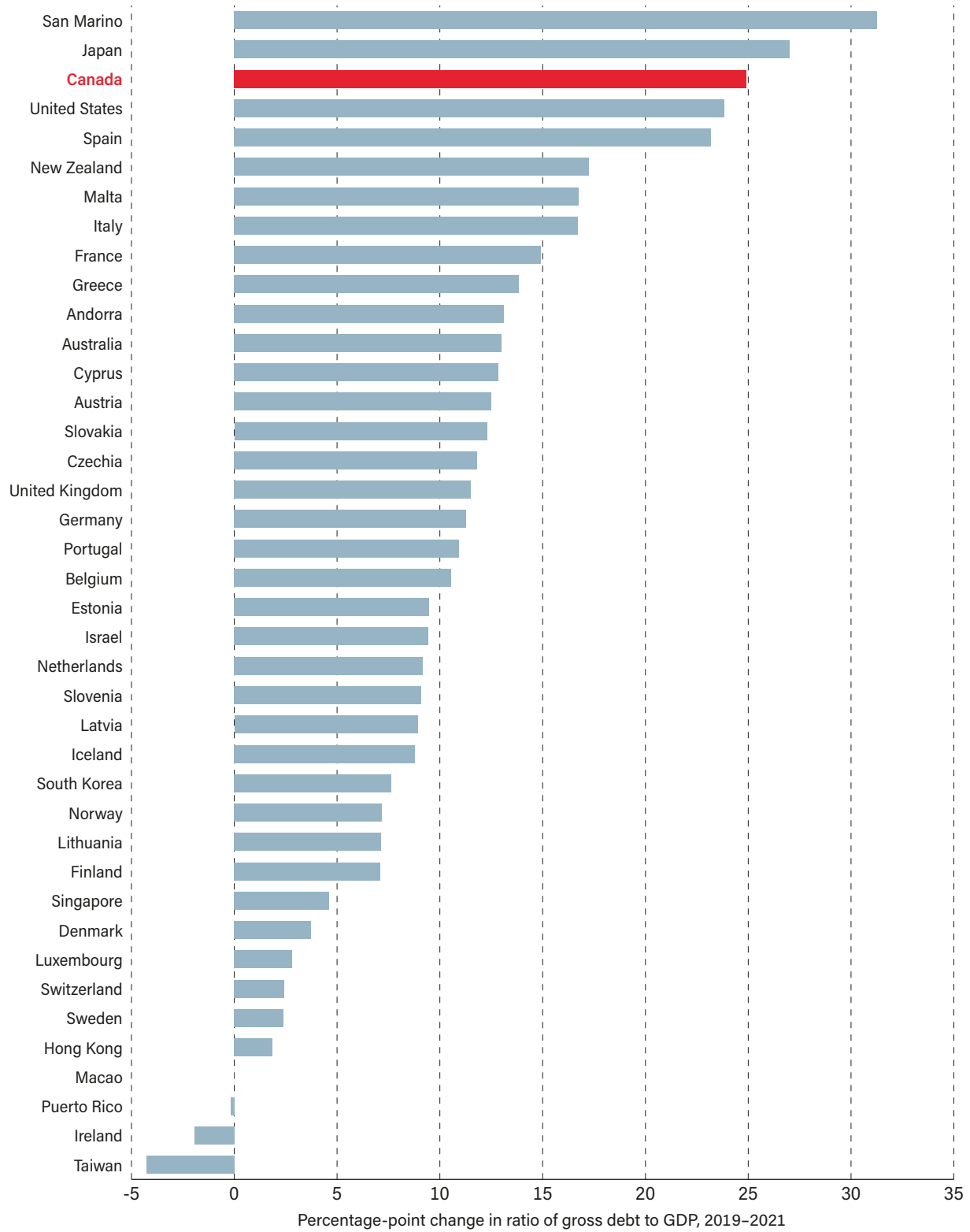
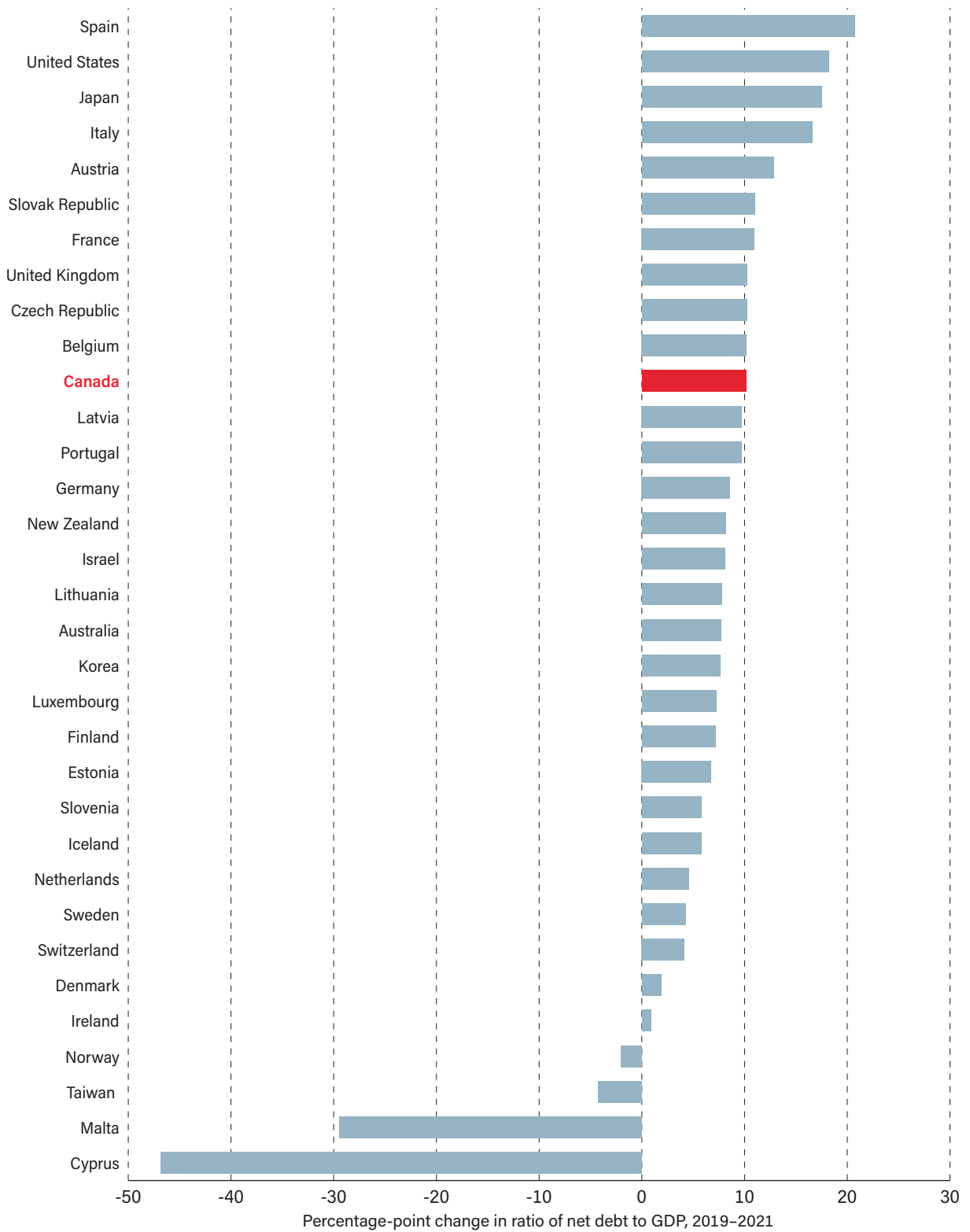


Figure 2.4B: Percentage-point change in ratio of net debt to GDP, 2019–2021, IMF Advanced Economies



Conclusion

The health, economic, and fiscal impacts of the COVID-19 pandemic internationally and in Canada are expected to linger for years to come. In assessing Canada's performance relative to the rest of the world with respect to the fiscal response and impact of COVID-19, the most appropriate comparisons are with countries at similar levels of income and development, the IMF Advanced Economies. The COVID-19 pandemic had an enormous fiscal impact on countries around the world and Canada was not an exception.

Canada averaged a 2.2% drop in general government revenue in 2020 according to the IMF; this is not as severe as the average estimated drop for the IMF Advanced Economies at 3.5% and the G7 at 4.3%. Revenues then rebounded and at 11.4%, Canada ranked 22nd highest of 39 IMF Advanced Economies in 2021. As for spending in 2020, of 194 IMF countries, at an expenditure increase of 19.7% Canada ranked 25th highest in the world. Canada's increase in government expenditure in 2020 of 19.7% was well above the world average of 8.7%, the G7 average of 13.2%, and the average for the IMF Advanced Economies of 10.5%. Expenditure increases have led to increases in the size of the public sector as measured by the ratio of total government expenditure to GDP. Canada was generally midrange in both 2019 and in 2021 for the ratio of government expenditure to GDP, ranking 19th out of 40 in both years. This was a far cry from 2020 when, with a government expenditure-to-GDP ratio of 53%, it ranked 10th of the 40 IMF Advanced Economies.

When expenditures exceed revenues, there is a deficit and, in 2020, Canada is estimated to have had a deficit-to-GDP ratio of 11.4%, well above the average of the IMF Advanced Economies of 7.7%, the G7 average of 10.2%, and the world average of 6.4%. Canada's deficit-to-GDP ratio in 2020 ranked 23rd largest of 195 countries worldwide and 5th highest of the IMF Advanced Economies. Over the two years spanning 2020 to 2021, Canada had the 13th largest estimated average deficit-to-GDP ratio of the IMF Advanced Economies. Finally, considering debt accumulation, 161 out of 196 IMF countries saw an increase in their gross debt-to-GDP ratios from 2019 to 2021, nearly 80% of countries. Canada saw its gross debt-to-GDP ratio increase by nearly 25 percentage points compared to an average of 10.6 points for the IMF Advanced Economies. Canada had the third largest percentage-point increase in its gross debt-to-GDP ratio and the 11th largest increase in net debt of the IMF Advanced Economies between 2019 and 2021.

The Canadian fiscal response to the pandemic, particularly during the early phases, appears to have been much larger than that of many other countries at similar levels of income and development. While the pandemic was unprecedented and uncertainty

was rife, in retrospect Canada's fiscal response was especially large and driven by the federal response rather than those of the provinces. In some respects, the ability of Canada to ramp up its fiscal response in time of need reflects its long-term prudent fiscal management and resulting low debt-to-GDP ratio in the decades after the federal fiscal crisis of the 1990s. At the same time, the size of the deficit and fiscal response during the pandemic should not be allowed to become a long-term features of the public finances. While at the provincial level, deficits appear correlated to some extent with the intensity of the pandemic, at the federal level over half the deficit incurred during the pandemic was related to COVID-19, either health transfers or income support to people and businesses, while the remainder was stimulus and spending over and above the direct requirements of the pandemic. The latter has permanently increased the size of the Canadian federal government's footprint (Di Matteo, 2022: 30). This raises questions as to the extent of fiscal oversight available or desired at the federal level so that such an excess is not repeated during a future crisis.

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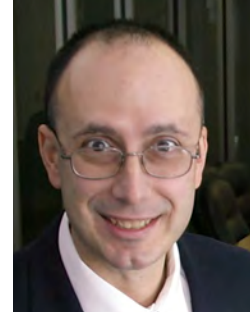
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Livio Di Matteo is a Senior Fellow at the Fraser Institute and Professor of Economics at Lakehead University in Thunder Bay, Ontario, where he specializes in public policy and finance, health economics, and economic history. His most recent work examines value for money in health-care spending and the drivers and sustainability of health-care spending; fiscal economic history; and the historical evolution of economic inequality in Canada and internationally. Prof. Di Matteo is a member of the CIHI National Health Expenditure Advisory Panel and a contributor to *Fraser Forum*, the Fraser Institute's blog, The HUB.ca, as well as his own policy blog, *Northern Economist 2.0*. His op-eds have appeared frequently in many newspapers across Canada including the *Globe and Mail*, *National Post*, *Financial Post*, *Toronto Star*, *Winnipeg Free Press*, *Waterloo Region Record*, and *Hamilton Spectator*. He has been listed in Canada's *Who's Who* since 1995 and holds a Ph.D. from McMaster University, an M.A. from the University of Western Ontario, and a B.A. from Lakehead University.



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