BANK OF CANADA
BANQUE DU CANADA

Staff Discussion Paper/Document d'analyse du personnel — 2020-10

Last updated: January 14, 2021

Assessing Global Potential Output Growth: October 2020

by Xin Scott Chen, Ali Jaffery, Guillaume Nolin, Karim Salhab, Peter Shannon and Subrata Sarker

International Economic Analysis Department
Bank of Canada, Ottawa, Ontario, Canada K1A 0G9

scottchen@bank-banque-canada.ca, ajaffery@bank-banque-canada.ca, gnolin@bank-banque-canada.ca, ksalhab@bank-banque-canada.ca, pshannon@bank-banque-canada.ca, ssarker@bank-banque-canada.ca

ISSN 1914-0568

Acknowledgements

We would like to thank José Dorich, Kristina Hess and Rhys Mendes for their useful comments and suggestions. We would also like to thank Rida Aamer for excellent research assistance.

Abstract

This paper presents updated estimates of potential output growth for the global economy through 2022. Global potential output growth is expected to decline sharply in the aftermath of the COVID-19 pandemic and recover partially by the end of the projection horizon of the October 2020 *Monetary Policy Report*. More specifically, global potential output growth is expected to decline from 3.3 percent in 2019 to 2.1 percent in 2020 and then recover gradually to 2.7 percent by 2022. While growth is expected to decline in all regions, the negative effects of COVID-19 on trend labour productivity growth in emerging market economies are the largest contributor to the overall expected slowdown in global growth. This also reflects Bank of Canada staff's assessments of ongoing headwinds from aging, trade tensions and structurally low trend total factor productivity growth across all regions. A partial recovery in all regions is expected to be driven mainly by the gradual recovery in trend total factor productivity growth and trend labour input growth. In the US, potential output growth is expected to decline sharply in 2020, mostly due to a decline in the trend participation rate and a reduction in the growth rate of immigration. By 2022, US potential output growth is expected to partially recover due to an improvement in trend total factor productivity growth and a modest recovery in trend labour input growth.

Topics: Potential output; Productivity
JEL codes: E10, E20, O4

Résumé

Cette étude présente des estimations actualisées de la croissance de la production potentielle pour l'économie mondiale jusqu'en 2022. On s'attend à ce que la croissance de la production potentielle mondiale ralentisse fortement dans la foulée de la pandémie de COVID-19 et qu'elle se redresse partiellement d'ici la fin de la période de projection du *Rapport sur la politique monétaire* d'octobre 2020. Plus précisément, le taux de croissance de la production potentielle mondiale devrait passer de 3,3 % en 2019 à 2,1 % en 2020, puis remonter progressivement à 2,7 % en 2022. La croissance devrait ralentir dans toutes les régions, mais ce sont les effets négatifs de la pandémie sur la croissance de la productivité tendancielle du travail dans les économies émergentes qui contribuent le plus au ralentissement global attendu de la croissance mondiale. Cette prévision concorde également avec les évaluations du personnel de la Banque du Canada des vents contraires existants liés au vieillissement de la population, aux tensions commerciales et à la croissance tendancielle structurellement faible de la productivité totale des facteurs dans l'ensemble des régions. On s'attend à une reprise partielle à l'échelle des régions principalement à la faveur du redressement graduel tant de la croissance tendancielle de la productivité totale des facteurs que de la croissance du facteur travail tendanciel. Aux États-Unis, la croissance de la production potentielle devrait

nettement reculer en 2020, surtout en raison de la baisse du taux d'activité tendanciel et du taux de progression de l'immigration. D'ici 2022, la croissance de la production potentielle américaine devrait rebondir partiellement grâce à une amélioration de la croissance tendancielle de la productivité totale des facteurs et à une reprise modeste de la croissance du facteur travail tendanciel.

Sujets : Production potentielle; Productivité
Codes JEL : E10, E20, O4

1. Introduction

This paper presents the annual update of Bank of Canada staff's estimates of global potential output growth, which was undertaken as part of the analysis supporting the October 2020 *Monetary Policy Report* (MPR). Staff used a growth accounting framework to estimate potential output for all the regions covered in the projections presented in the MPR.[1]

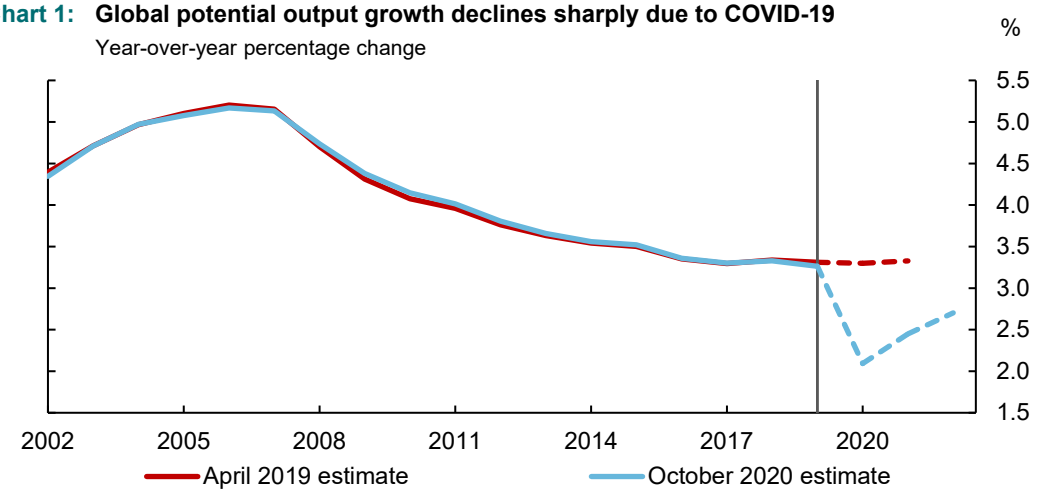
The main focus of this update is the impact of the COVID-19 pandemic on global potential output growth. The course of the pandemic is uncertain, and its impacts are still unfolding. For this update, staff assume that temporary and localized containment measures may become necessary but that there will not be widespread closures like those imposed during the early days of the pandemic. Staff also assume that vaccines and effective treatments will be widely available by mid-2022. The direct effect of the pandemic on the economy is thus expected to end by then, though uncertainty and household cautiousness will remain. Moreover, scarring effects of the pandemic are expected to persist over the projection horizon, including costly reallocation of resources, reduced labour market participation and diminished entrepreneurial activity and business formation. Staff estimate that these and other factors related to COVID-19 imply a drop of 2.2 percent in global potential gross domestic product (GDP) by the end of the projection horizon relative to the level that would have been achieved in the absence of the pandemic (see **Box 1**).

Global potential output growth is expected to decline sharply in the aftermath of COVID-19 and recover partially by the end of the projection horizon (**Chart 1**). While potential output growth is expected to decline in all regions (**Table 1**), a significant pandemic-induced reduction in trend labour productivity (TLP) growth in oil-importing emerging-market economies (EMEs) is the largest contributor to the overall expected slowdown in global growth. However, the slowdown also reflects staff's assessment of ongoing headwinds from aging, trade tensions and structurally low trend total factor productivity (TFP) growth across all regions. A partial recovery in all regions is expected to be driven mainly by the gradual recovery in growth of both trend TFP and trend labour input (TLI).

[1] See Bounajm et al. (2019) for a general review of staff's methodology for estimating global potential output. For the 2020 update, the only material change relative to the methodology laid out by Bounajm et al. (2019) is that a growth accounting framework was used for the "rest of the world" grouping, in contrast to the filtering approach used previously.

Chart 1: Global potential output growth declines sharply due to COVID-19

Year-over-year percentage change



Sources: National sources and Bank of Canada calculations Last data plotted: April 2019 estimate, 2021; October 2020 estimate, 2022

Table 1: Projection for potential output growth

	Share of real global GDP	Projected growth* (percent)			
		2019	2020	2021	2022
United States	16	1.8 (1.9)	1.1 (1.9)	1.1 (1.8)	1.5
Euro area	12	1.4 (1.5)	0.8 (1.4)	1.0 (1.3)	1.1
Japan	4	0.9 (0.8)	0.4 (0.8)	0.6 (0.7)	0.6
China	17	6.1 (6.1)	5.1 (6.0)	5.3 (5.9)	5.3
Oil-importing EMEs†	34	4.1 (4.2)	2.3 (4.3)	2.9 (4.4)	3.4
Rest of the world‡	17	1.8 (1.9)	0.9 (2.0)	1.3 (2.1)	1.5
World	100	3.3 (3.3)	2.1 (3.3)	2.4 (3.3)	2.7

* Numbers in parentheses are projections used in the April 2019 *Monetary Policy Report*.

† The oil-importing emerging-market economies (EMEs) group excludes China. It is composed of large EMEs from Asia, Latin America, the Middle East and Africa (such as India, Brazil and South Africa), as well as newly industrialized economies (such as South Korea).

‡ "Rest of the world" is a grouping of all other economies not included in the first five regions. It is composed of oil-exporting EMEs (such as Russia, Nigeria and Saudi Arabia) and other advanced economies (such as Canada, the United Kingdom and Australia).

In the United States, after an initial decline, potential output growth is expected to recover partially over the projection horizon. In particular, trend TFP growth is expected to recover gradually as labour and capital are allocated more efficiently across sectors over time. A more modest recovery is expected for TLI growth, with improvements in immigration growth largely offset by declines in trend labour force participation.

Relative to the April 2019 MPR, global potential growth has been revised down by 1.2 and 0.9 percentage points in 2020 and 2021, respectively (**Table 1**). These revisions mainly reflect the negative effects of COVID-19 on potential output growth in all regions over both years.

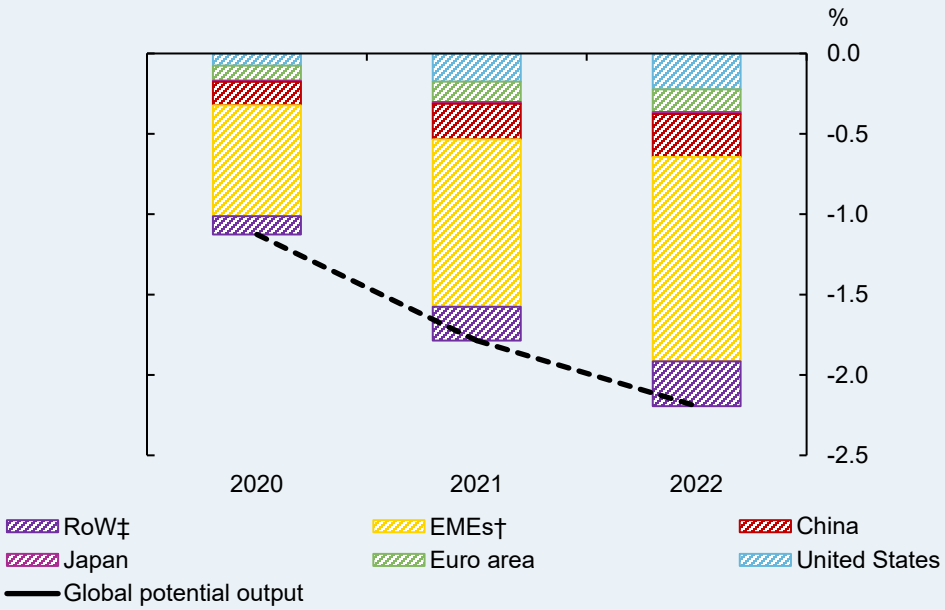
The remainder of the paper is organized as follows. Sections 2 to 6 analyze the dynamics of potential output growth for each region. Section 7 discusses the upside and downside risks around global potential output growth.

Box 1

COVID-19 will have a large and persistent impact on the level of global potential output

COVID-19 is expected to reduce the level of global potential output by 2.2 percent in 2022 (**Chart 1-A**). While the decline is broad-based across all regions, emerging-market economies (EMEs) have been especially affected by the COVID-19 shock.

Chart 1-A: COVID-19 lowers the level of global potential output driven by EMEs



Note: The coloured bars represent contributions to the change in the level of potential output in percentage points relative to a scenario with no COVID-19.
† The oil-importing emerging-market economies (EMEs) group excludes China. It is composed of large EMEs from Asia, Latin America, the Middle East and Africa (such as India, Brazil and South Africa), as well as newly industrialized economies (such as South Korea).
‡ "Rest of the world" is a grouping of all other economies not included in the first five regions. It is composed of oil-exporting EMEs (such as Russia, Nigeria and Saudi Arabia) and other advanced economies (such as Canada, the United Kingdom and Australia).

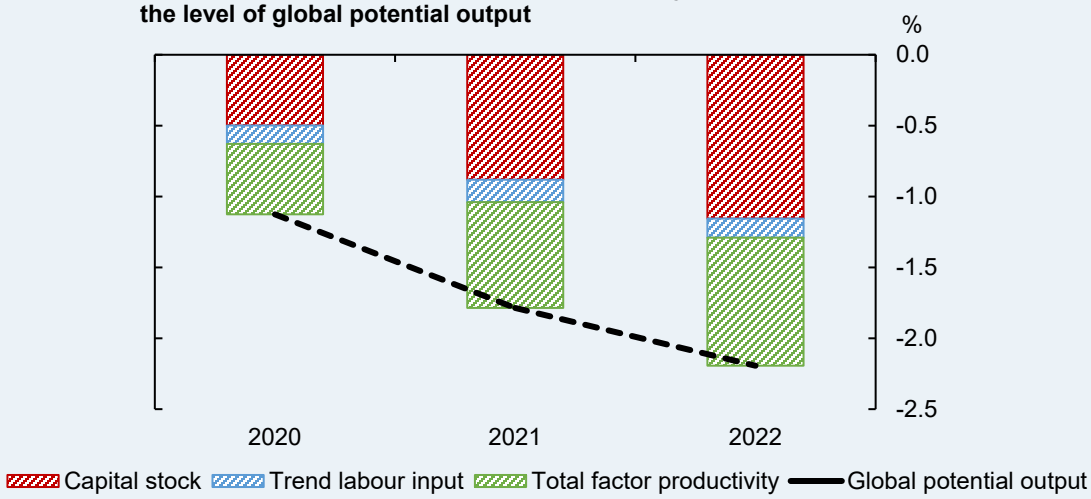
Source: Bank of Canada calculations

Last data plotted: 2022

The larger assessed impact of COVID-19 on potential output in EMEs is mostly due to considerably weaker investment relative to advanced economies. This reflects several factors. Advanced economies have had stronger policy responses aimed at easing financial conditions, reducing uncertainty and providing loans to distressed firms. In contrast, EMEs' policy responses have been more limited. Moreover, EMEs have greater exposure to global trade, which has been significantly affected by the COVID-19 shock. The situation is very similar in many economies in the "rest of the world" grouping, though they have the added drag on investment from low oil prices. Moreover, while China managed to contain the virus better than most other economies, its high reliance on investment generally makes it more vulnerable to the negative impact of uncertainty. As a result of lower investment across these

and other regions in response to the COVID-19 shock, staff assess that a lower stock of capital is the largest source of drag on global potential output (**Chart 1-B**).

Chart 1-B: Lower capital stock and total factor productivity due to COVID-19 reduce the level of global potential output



Note: The coloured bars represent contributions to the change in the level of potential output in percentage points relative to a scenario with no COVID-19.
Source: Bank of Canada calculations

Last data plotted: 2022

In addition, COVID-19 is expected to exert more downward pressure on total factor productivity (TFP) in EMEs than in advanced economies because of inefficient reallocation of labour. More specifically, workers in EMEs are expected to remain more attached to the labour force because of weaker social safety nets, but it is also expected that they will move away from more productive urban and formal sectors to less productive rural and informal sectors. A slower urbanization process is similarly expected to be the largest contributor to the decline in China's TFP. Weaker imports and foreign direct investment are also expected to negatively affect TFP in EMEs and China.

Trend labour input, in contrast, is expected to be more negatively affected in advanced economies because of their greater share of services sector jobs and more stringent social distancing policies. Scarring effects on labour are expected to be larger in these economies as proportionately more workers were employed in the contact-sensitive sectors most heavily affected at the onset of the pandemic. The euro area is expected to fare slightly better than the United States, as more generous support policies better preserve labour market matching, lessening somewhat the impact from scarring. A significant slowdown in immigration in the United States also explains part of the weakness relative to the euro area.

2. United States

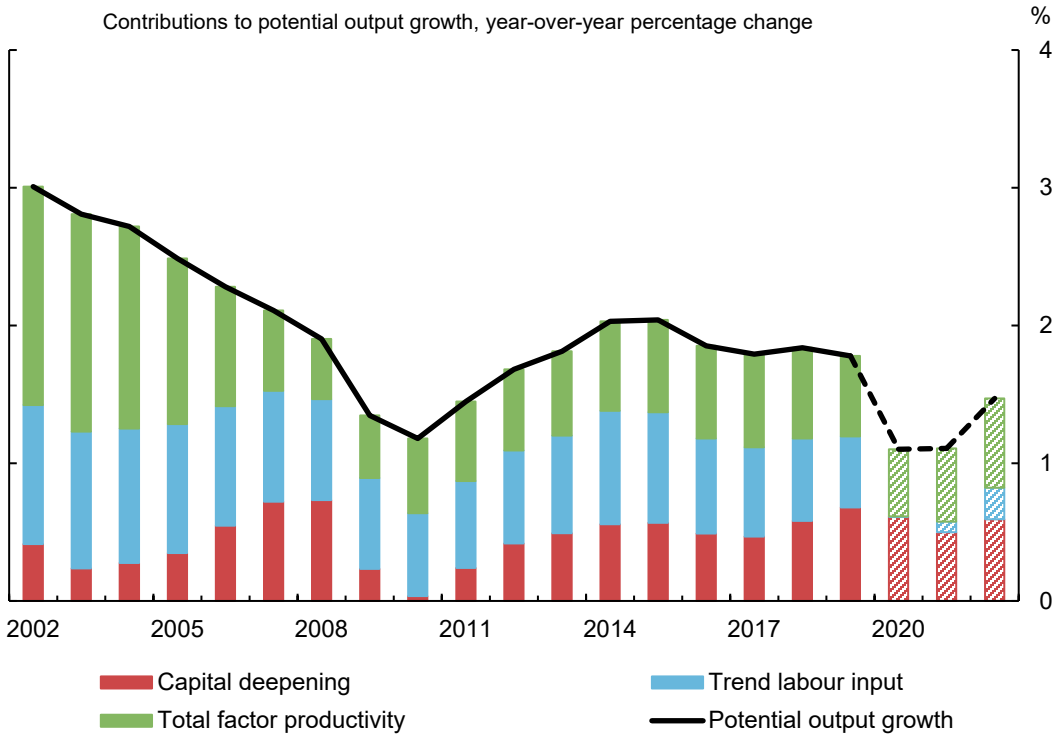
At the onset of the COVID-19 pandemic, population aging, structurally low productivity growth and trade tensions were already weighing on US potential output growth. While the course of the pandemic remains highly uncertain, it is expected to leave lasting scars on US production capacity and weigh on potential output growth over the projection horizon. In this reassessment, staff focus on the following four key channels through which COVID-19 is expected to cause persistent changes in the supply side of US economy:

- Lower immigration: Immigration is significantly below pre-pandemic levels and is assumed to recover only gradually.
- Labour market scarring: Containment measures and behavioural changes are expected to generate higher long-term unemployment and reduce long-term participation.
- Lower capital accumulation: Widespread temporary business closures and an increase in prospective bankruptcy cases amid weaker expected aggregate demand and heightened uncertainty suggest a lower rate of capital accumulation.
- Lower trend TFP growth: Weaker trend TFP growth is likely given changes to the nature of work due to the adoption of health and safety measures; loss of firm-specific human capital; reduced firm entry; and costly reallocation of resources. Cleansing dynamics, as unproductive firms exit and productive firms expand, should provide some offset to these dampening factors.

Several other possible channels have not been included in this assessment. These are described in more detail in the discussion of risks (Section 7).

After accounting for the four channels described above and other factors, such as population aging and structurally low productivity, staff estimate that US potential output growth will decrease from 1.8 percent in 2019 to 1.1 percent in 2020 (**Chart 2**). This large decrease is mostly explained by a reduction in TLI growth, associated with declines in immigration and the trend participation rate (**Table 2**). Potential output growth is expected to remain at 1.1 percent in 2021, before rising to 1.5 percent in 2022.

Chart 2: US potential output growth is expected to slow sharply



Source: Bank of Canada calculations

Last data plotted: 2022

Table 2: Components of US potential output

	2019	2020	2021	2022
Trend labour input growth (%)	**0.5**	**0.0**	**0.1**	**0.2**
Population growth (%)	0.9	0.6	0.7	0.9
Participation rate (%)	63.2	62.9	62.5	62.1
Natural rate of unemployment (%)	4.2	4.2	4.2	4.2
Average weekly hours per worker	33.6	33.6	33.6	33.6
Trend labour productivity growth (%)	**1.3**	**1.1**	**1.0**	**1.2**
Total factor productivity growth (%)	0.6	0.5	0.5	0.6
Capital deepening (pp ctg)	0.7	0.6	0.5	0.6
Potential output growth (%)	**1.8**	**1.1**	**1.1**	**1.5**

Note: The participation rate and the natural rate of unemployment are expressed as rates in percentage terms. All other percentages express year-over-year growth. Capital deepening is expressed as contribution to growth in percentage point terms.

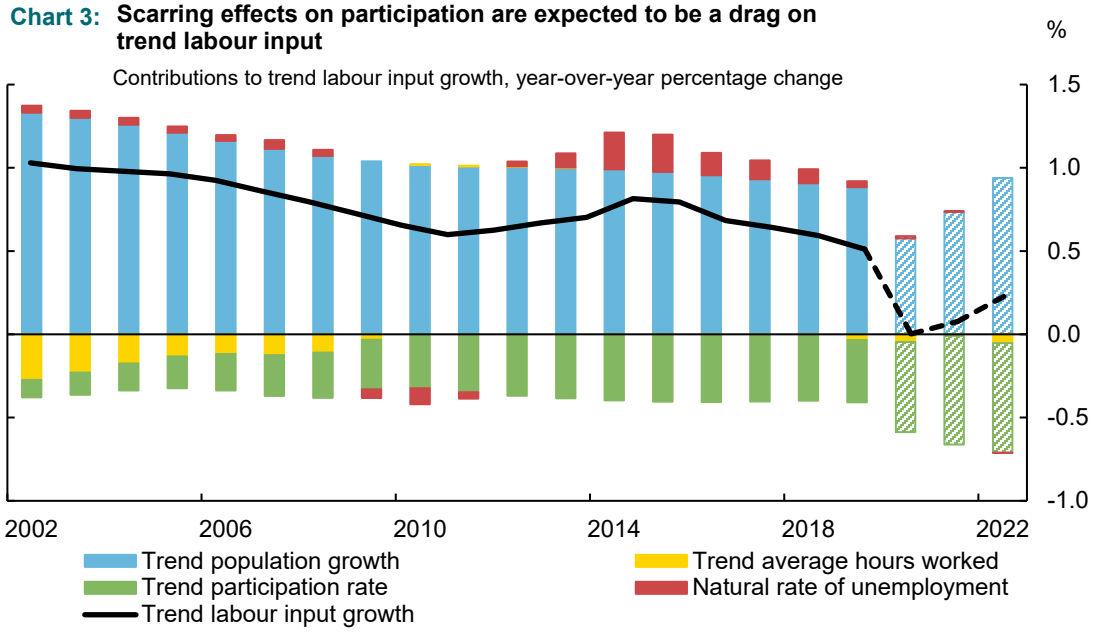
a) US trend labour input

The negative economic effects of the pandemic are expected to weigh on TLI growth mostly through short-term lower immigration growth and labour market scarring. This scarring will be mainly in the form of a steeper decline in the trend participation rate.

Staff estimate that TLI growth will slow from 0.5 percent in 2019 to 0.0 percent in 2020, before gradually rising to 0.2 percent by 2022 (**Chart 3**). Immigration has collapsed in 2020 because of COVID-19 and is expected to reduce population growth through most of the projection horizon. Reduced immigration flows are expected to lower TLI growth by about 0.3 percentage points in 2020 compared with 2019. A gradual catch-up of immigration is assumed. It will increase TLI growth by about 0.3 percentage points in 2022 relative to 2020 and bring overall population growth back to its pre-COVID-19 growth rate by 2022.[2]

Chart 3: Scarring effects on participation are expected to be a drag on trend labour input

Contributions to trend labour input growth, year-over-year percentage change



Source: Bank of Canada calculations

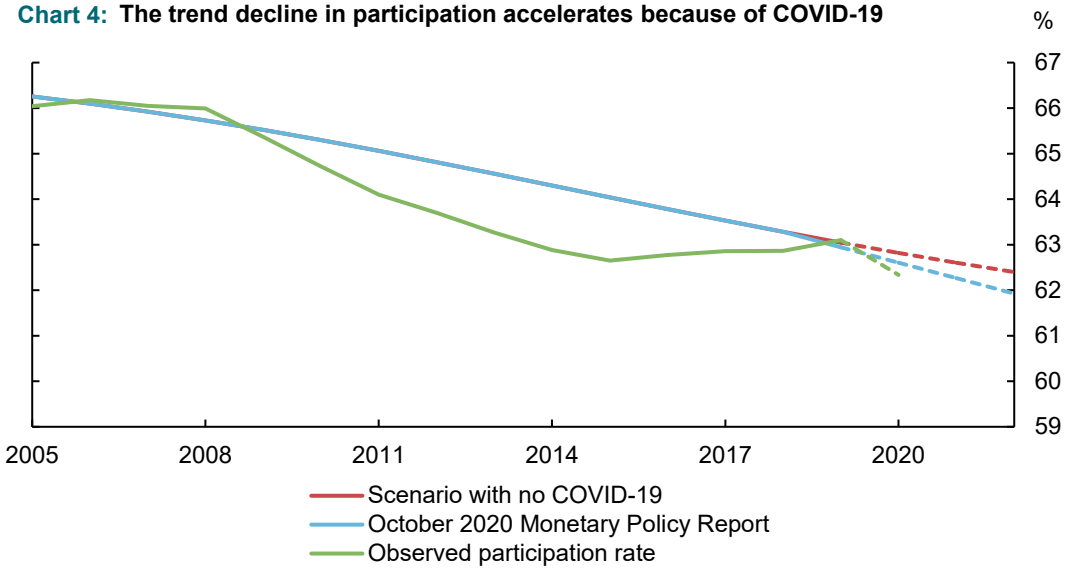
Last data plotted: 2022

Population aging is expected to continue to drive the decline in the trend participation rate. The COVID-19 shock is expected to further accelerate this decline (**Chart 4**). While many of the layoffs in the immediate wake of the lockdowns were temporary, the COVID-19 shock will likely cause higher long-term unemployment. This should result in a faster gradual transition of workers out of the labour force as they become discouraged and reduce the intensity of their search for a job, which typically occurs after recessions.[3]

[2] The decline in population growth from lower immigration is based on an assessment of alternative scenarios of the impact of immigration on overall population growth produced by the United States Census Bureau in February 2020 (Johnson 2020).

[3] Gregory, Menzio and Wiczer 2020 show that the pandemic-induced separation between employees and employers can have long-lasting impacts on the employment status of workers and that lower-wage workers face the highest probability of long-term unemployment during the pandemic.

Chart 4: The trend decline in participation accelerates because of COVID-19



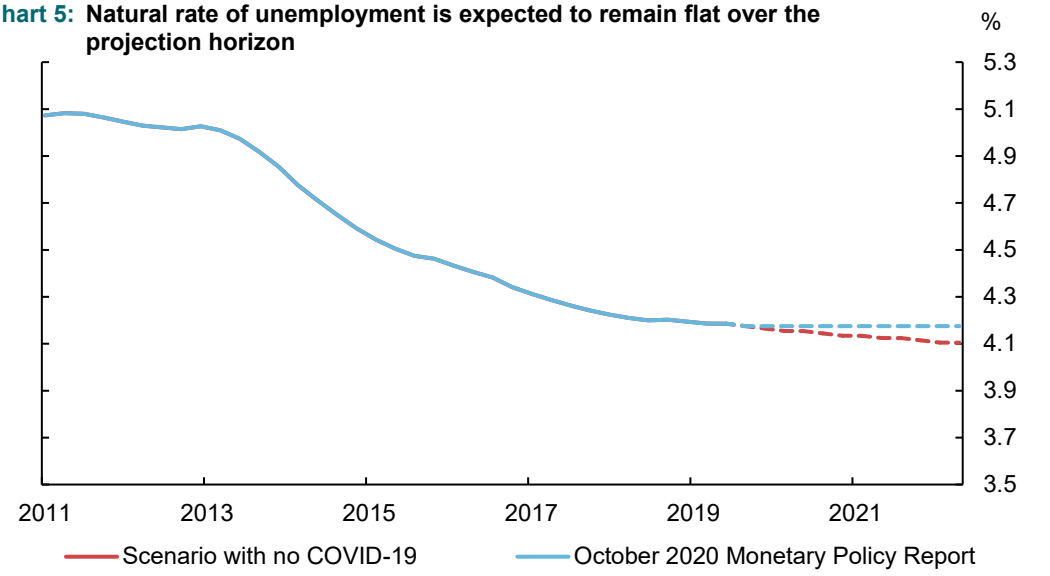
Source: Bank of Canada calculations

Last data plotted: 2022

The US natural rate of unemployment is expected to remain flat over the projection horizon (**Chart 5**), as the trend job-separation rate and the trend job-finding rate both decline at the same pace over the projection.[4] On one hand, secular increases in the aging of workers and firms will exert downward pressure on the trend job-separation rate, as older workers are less likely to be laid off and older firms are less likely to lay off workers (Crump et al. 2019). On the other hand, COVID-19 and other structural factors (lack of business dynamism, automation) will cause the trend job-finding rate to decline over the projection. The COVID-19 pandemic is expected to disproportionately effect job-finding rates in contact-intensive sectors. Absent the pandemic, the trend job-finding rate would decline at a slower pace than the trend job-separation rate, causing the natural rate of unemployment to fall slightly over the projection horizon to 4.1 percent by 2022.

[4] Weingarden (2017) formulates the natural rate of unemployment as a function of the trend job-separation rate and the trend job-finding rate. The trend job-separation rate represents the flow of workers from employment to unemployment divided by the stock of employed workers. The trend job-finding rate represents the flow of workers from unemployment to employment divided by the stock of unemployed workers.

Chart 5: Natural rate of unemployment is expected to remain flat over the projection horizon



Source: Bank of Canada calculations

Last data plotted: 2022Q4

b) US trend labour productivity

The COVID-19 pandemic has resulted in disruptions to the nature of work, reduced firm entry and diminished business investment, all of which are expected to weigh on TLP. However, higher allocative efficiency gains—from less-productive firms exiting and more-productive firms expanding—are assumed to gradually support TLP.

Staff estimate that TLP growth will slow slightly from 1.3 percent in 2019 to 1.2 percent by 2022. In the current projection, TLP growth is expected to be driven equally by TFP growth and capital deepening.

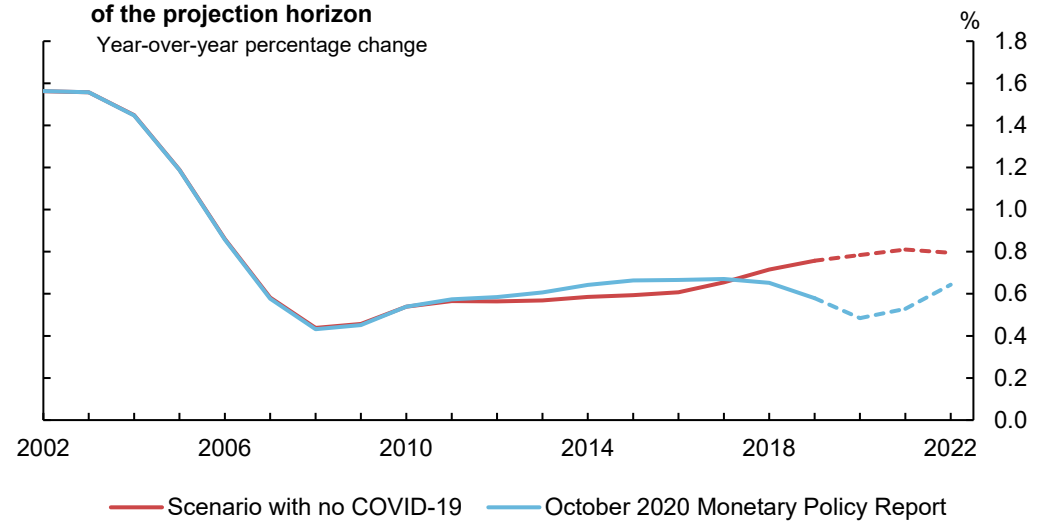
Trend TFP growth was 0.6 percent in 2019 and declines to 0.5 percent in 2020 (**Chart 6**). From 2021, TFP gradually recovers and reaches its 2019 level by 2022. The path of TFP growth over the projection horizon is guided by the following considerations:

- The adoption of health and physical distancing measures within work settings depresses productivity in 2020 (Gorlick 2020). These measures include large-scale remote work and restrictions on the number of individuals within work spaces or businesses such as restaurants. Early assessments suggest remote work has resulted in an increase in the span of the work day, involving more disruptions and more time communicating by email (DeFilippis et al. 2020; Barrero, Bloom and Davis 2020).
- The decline in net firm entry will weigh on productivity (Decker et al. 2017; Clementi and Palazzo 2016). While official insolvency and bankruptcy data have yet to show increases in firm destruction, there are widespread reports of a surge in prospective bankruptcies and firm closures (Ngo 2020).
- The gradual recovery in TFP after 2020 is based on the assumption that firm reallocation will enhance productivity as less-productive firms exit while more-

productive firms grow, consistent with past downturns (Foster, Grim and Haltiwanger 2016). However, the COVID-19 shock does differ from past downturns in that it does not reflect economic imbalances. As a result, the allocative efficiency gains from the COVID-19 shock are expected to be less than those from past downturns and to come in the form of reinforcing pre-COVID-19 trends of increased digitalization and automation.[5] Staff assume that the allocative efficiency gains increase over time and that the drags from physical distancing measures and reduced firm entry gradually fade over the projection horizon. This will result in slowly rising trend TFP growth.

Capital deepening is relatively stable over the projection horizon, adding an average of 0.6 percentage points to potential output growth over the projection horizon. Staff expect the growth of capital stock to decline from 2.4 percent in 2019 to around 1.5 percent in 2020 and 2021 before recovering modestly in 2022. Gradual dissipation of the effects of physical distancing and highly accommodative monetary policy support the gradual improvement in investment and capital stock. Firm bankruptcies and increased uncertainty due to the pandemic, however, continue to weigh on investment.

Chart 6: Trend total factor productivity growth is expected to recover by the end of the projection horizon



Source: Bank of Canada calculations

Last data plotted: 2022

3. Euro area

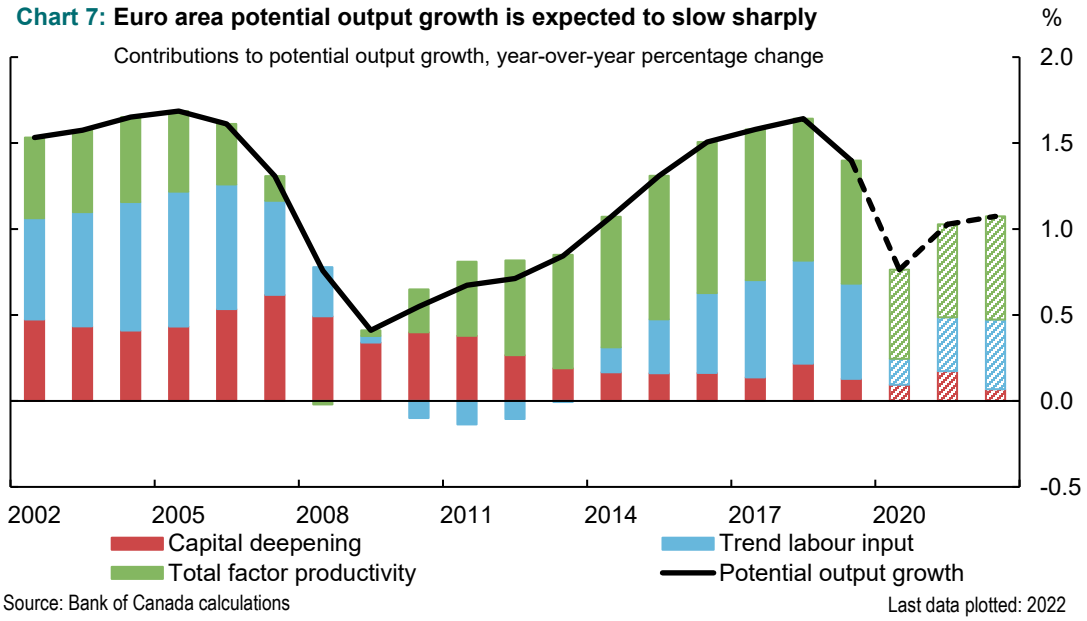
Prior to the pandemic, potential output growth in the euro area was already expected to slow gradually, given the demographic challenges and the dissipation of the positive effects of past labour market reforms. The pandemic caused a severe, broad-based downturn unseen in modern times, leading to a more pronounced slowdown in potential output growth than

[5] Foster, Grim and Haltiwanger (2016) provide an estimated range for the contribution of firm reallocation to aggregate productivity growth of 0.2 to 0.9 percentage points. They find that the reallocation during the 2008–09 global financial crisis contributed about 0.3 percentage points to aggregate productivity growth.

what was expected before COVID-19. While policy support should limit longer-term scarring, potential output growth will still slow in 2020 before recovering partially as the pandemic gradually subsides.

We assess that potential output growth will slow sharply in the short term from 1.4 percent in 2019 to 0.8 percent in 2020 before recovering gradually to 1.1 percent by 2022. This short-term decline is driven mostly by TLI, although TFP growth slows as well (**Chart 7**).

Chart 7: Euro area potential output growth is expected to slow sharply



Source: Bank of Canada calculations

Last data plotted: 2022

TLI growth will slow down significantly in 2020 as COVID-19 amplifies the secular decline from an aging workforce. The pandemic is expected to reduce trend hours worked and, to a lesser extent, trend participation rates. This downturn in the euro area has been cushioned by generous policy support (such as short-time work programs) that preserved labour force attachment and reduced the impact on trend participation rates. The specific nature of the labour market support programs, however, reduces trend hours worked over the projection. Overall, the contribution to potential growth from TLI is expected to be 0.4 percentage points lower in 2020 compared with 2019 before recovering gradually over the projection horizon. Generous policies combined with loan guarantees to curb mass bankruptcies support the partial recovery of TLI in 2021 and 2022 as the impact of the pandemic subsides. COVID-19's effect on TLI is somewhat smaller in the euro area than in the United States, because euro area government policies preserve labour market matching. Also, the demographics projection in Europe is not affected by a sudden reduction in the number of immigrants, as is expected in the United States.

TFP growth was slowing in the euro area even before the pandemic as the positive benefits from past structural reforms diminished. Given the degree of "reform fatigue" prior to the pandemic, further reforms are unlikely. The pandemic puts further pressure on TFP because it

forces physical distancing measures on firms, such as large-scale remote work and reduced capacity in the contact-intensive sectors. The disruption of the global value chain for the trade-dependent euro area will likely dampen TFP growth as well. Finally, the renewed uncertainty surrounding Brexit may provide further drags on TFP. Altogether, the contribution of TFP growth to potential output growth will decline from 0.7 percentage points in 2019 to 0.5 percentage points in 2020, before recovering to 0.6 percentage points by 2022.

Following the severe contraction in the first half of 2020, investment is expected to recover gradually as global and domestic demand rebound. Taken together with modest TLI growth, this results in a small but positive contribution to potential output growth from capital deepening over the projection horizon (0.1 percentage points on average).

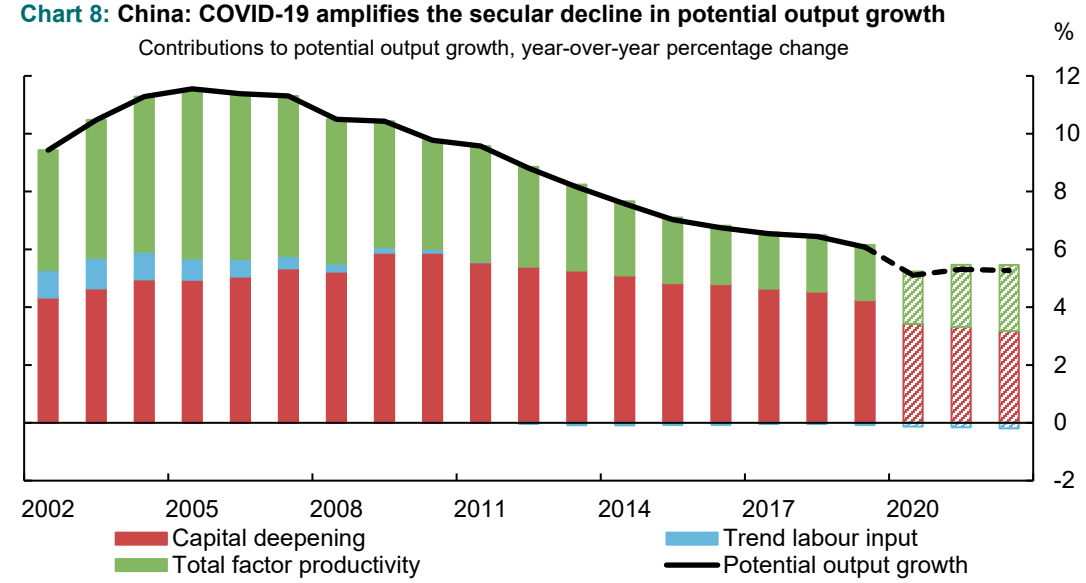
4. China

China's potential output growth has been falling over recent years, reflecting population aging and slower capital accumulation. In 2020, it is expected to slow further, mainly because of headwinds from COVID-19 and trade tensions. By 2022, potential output growth recovers slightly as positive effects from research and development spending and the dissipation of the COVID-19 shock slightly dominate drags from population aging and trade tensions.

China's potential growth is expected to slow from 6.1 percent in 2019 to 5.3 percent in 2022. This decline is explained by reductions in the contributions to growth of capital deepening and of TLI, which are partially offset by an increase in the positive contribution from TFP growth (**Chart 8**).

The growth of capital stock is expected to slow further, as COVID-19 increases uncertainty and depresses external demand, which in turn weighs on private investment. This will be partly offset by policy stimulus implemented to limit the impact of the COVID-19 shock. This stimulus is helping to support infrastructure and real estate. Moreover, trade tensions also have a negative impact on investment. Despite a partial trade agreement with the United States in January 2020, tensions remain elevated. Overall, the contribution of capital deepening to potential output growth is expected to decline from 4.3 percentage points in 2019 to 3.2 percentage points in 2022.

Chart 8: China: COVID-19 amplifies the secular decline in potential output growth



Source: Bank of Canada calculations

Last data plotted: 2022

TLI growth has been a marginal drag on potential output growth since 2012. Over the next few years, with population aging, it will become a more significant drag, reducing potential output growth by 0.2 percentage points by 2022. COVID-19 is expected to have a negligible long-term impact on labour input, given Chinese authorities' focus on restoring employment through policy stimulus aimed at the supply side. Further, migrant workers are likely to remain employed in rural areas rather than exit the labour force.

TFP growth is expected to be an important driver of potential output growth through 2022. The negative impact of the pandemic on TFP growth should remain limited: the urbanization process, imports and foreign direct investment will slow temporarily in 2020 and 2021, but by 2022, COVID-19 will no longer have a negative effect on TFP growth. Trade tensions will also continue to weigh on the level of TFP, although the impact on growth will fade after 2021. Finally, research and development spending is a major contributor to TFP growth and has been largely unaffected by COVID-19. We expect it to increase toward the average of countries in the Organisation for Economic Co-operation and Development (as a share of GDP), lifted by state-led initiatives and by technological innovation in private enterprises.

5. Oil-importing emerging-market economies

The pandemic has hit potential output growth the hardest in emerging markets among all the regions in the staff projection. Numerous EMEs have experienced severe virus outbreaks while having relatively little policy capacity to support affected firms and workers. In addition, the recent deceleration of structural reforms in EMEs should contribute to slow potential output growth over the projection horizon.

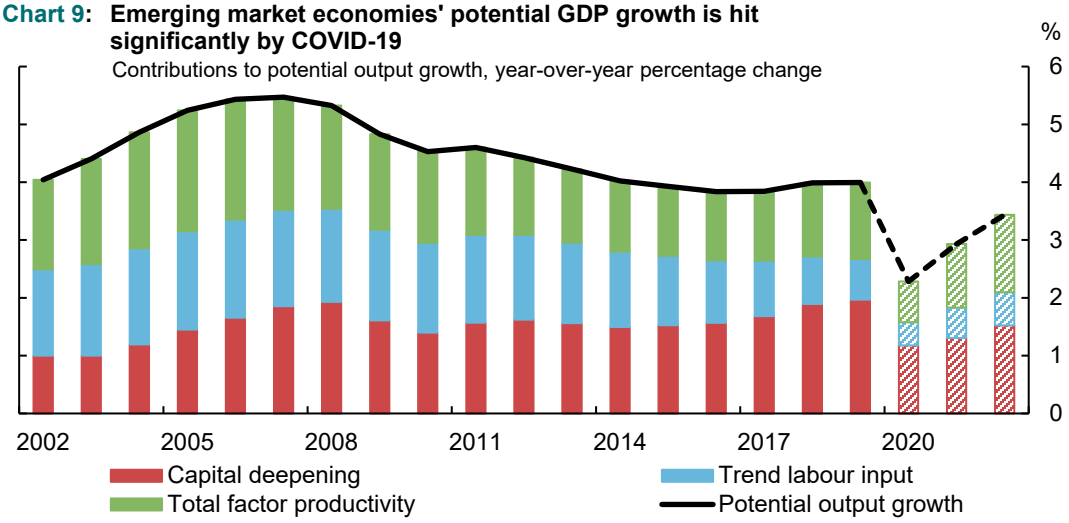
EME potential growth is expected to fall from 4.1 percent in 2019 to 2.3 percent in 2020 and then to partly rebound to 3.4 percent by 2022. The slowdown mostly reflects a fall in the contribution to growth from capital deepening and a reduction in TFP growth (**Chart 9**).

The contribution from capital deepening declines in 2020 because of containment effects and heightened uncertainty. In 2021 and 2022, continued uncertainty around the virus and around financial risks, such as elevated levels of bad debt in India, drags on the recovery of capital deepening.

The decline in TFP growth in 2020 mostly reflects the negative impact of physical distancing measures and reallocations driven by layoffs and firm closures. The reallocation process is expected to be more prominent and persistent in EMEs than in advanced economies given EMEs' weaker policy support and less efficient labour markets. In EMEs, this reallocation process will have a negative impact on TFP growth through slower urbanization and shifts to less productive informal sectors. TFP growth is expected to recover partially over 2021–22 as lockdown-related layoffs and firm closures slow and urbanization and the movement of labour within countries resume.

Chart 9: Emerging market economies' potential GDP growth is hit significantly by COVID-19

Contributions to potential output growth, year-over-year percentage change



Source: Bank of Canada calculations

Last data plotted: 2022

6. Other economies

In Japan, potential output was expected to grow at a modest pace before the pandemic, as the aging of the workforce partly offset positive labour productivity growth. The pandemic hit Japan early, but the impact of COVID-19 on potential output is smaller compared with other advanced economies. Japan has had fewer cases and deaths, and the containment measures have been shorter and more lenient. Strong policy response also played a role in mitigating scarring effects. The pandemic will add further downward pressure on TLI growth through reduced growth in trend hours worked and trend labour force participation. Investment and trend TFP growth will also fall in 2020 as a result of the impact of COVID-19. Going forward, capital deepening is expected to drive growth as investment, especially in intellectual property, continues to post gains. The marginal impact of COVID-19 on growth in TLI and TFP should dissipate gradually. Japan's potential output growth should slow modestly over the near term before recovering partially by 2022.

In the "rest of the world" grouping of countries, potential output growth was low before the pandemic. Persistent oil market uncertainty and geopolitical tensions in the Middle East and the United Kingdom weighed on TLP, while population aging in the group's advanced economies was offset by inflows of workers. The COVID-19 pandemic and concurrent fall in oil prices both further reduce the productive capacities of the economies in this group. TLP growth is the dominant contributor to this reduction. In 2020, mobility restrictions and increased uncertainty caused by COVID-19 have had an immediate negative impact on TLP growth. In 2021 and 2022, TLP growth is expected to recover partially as virus containment becomes less restrictive and firms adapt to physical distancing measures. However, low investment in Middle Eastern and African oil-exporting countries is expected to be a persistent drag on the recovery of TLP growth. The sharp contraction in global oil demand has left these countries with excess capacity and lower oil revenues with which to fund future state investment. TLI growth is also expected to remain low over the projection horizon because of ongoing aging in small advanced economies and reduced inflows of migrant labour throughout the group.

7. Risks around the outlook for global potential GDP growth

Staff find that this reassessment of global potential output growth is associated with a high level of uncertainty.

The key upside risks to potential output growth are:

- Early deployment of a vaccine: Rapid and early deployment of a vaccine could undo some labour market scarring, increase investment and have a positive impact on trend TFP growth.

- Digitalization and automation: The COVID-19 shock could induce a faster pace of technological upgrading than assumed in this reassessment, as workers and firms seek to adapt to conditions in which the virus remains a persistent health risk. For example, under specific circumstances in which all employees have home offices and child care arrangements, Bloom et al. (2015) find that teleworking can increase productivity. These developments could result in a faster pace of trend TFP growth and investment growth.
- Resolution of the trade tensions: A resolution of US-China trade tensions, including a rollback of tariffs implemented since 2018, is an upside risk to potential growth, especially for China. Increased geopolitical competition and potential technological "decoupling" could also support research and development spending in China.

The key downside risks to potential output growth are:

- Further waves of COVID-19 infections or government-imposed lockdowns: Scarring effects could be amplified by additional waves of large infections. Fiscal space (or the willingness to use fiscal policy) to support employer-employee linkages and prevent business closures may be inadequate if the virus situation worsens. EMEs with strained financial systems will be particularly vulnerable.
- Disincentives to work: Prolonged school closures, increased fear of contracting the virus and additional generous income support for workers (such as long-lasting unemployment insurance) could create disincentives to work and have adverse effects on labour supply decisions.
- Effects of increased market concentration: The large exit of firms unable to cope with the pandemic is likely to result in a further increase in market concentration. Higher market concentration has been associated with lower investment and could reduce capital deepening (International Monetary Fund 2019).
- Permanent disruptions to global supply chains: Early indications are that global supply chains have not been greatly disrupted by the pandemic. In our reassessment, we assume this pattern will continue. However, failure to contain the spread of the virus globally could result in more permanent disruptions to global supply chains and a lower rate of trend TFP growth.

References

Barrero, J. M., N. Bloom and S. J. Davis. 2020. "COVID-19 Is Also a Reallocation Shock." Becker Friedman Institute, University of Chicago, Working Paper No. 2020-59.

Bounajm, F., J-P. Cayen, M. Francis, C. Hajzler, K. Hess, G. Poulin-Bellisle and P. Selcuk. 2019. "Assessing Global Potential Output Growth: April 2019." Bank of Canada Staff Analytical Note No. 2019-13.

Bloom, N., J. Liang, J. Roberts and Z. J. Ying. 2015. "Does Working from Home Work? Evidence from a Chinese Experiment." *Quarterly Journal of Economics* 130 (1): 165–218.Clementi, G. L. and B. Palazzo. 2016. "Entry, Exit, Firm Dynamics, and Aggregate Fluctuations." *American Economic Journal: Macroeconomics* 8 (3): 1–41.

Crump, R. K., S. Eusepi, M. Giannoni and A. Sahin. 2019. "A Unified Approach to Measuring u*." Brookings Papers on Economic Activity (Spring).

Decker, R. A., J. Haltiwanger, R. S. Jarmin and J. Miranda. 2017. "Declining Dynamism, Allocative Efficiency, and the Productivity Slowdown." *American Economic Review* 107 (5): 322–326.

DeFilippis, E., S. M. Impink, M. Singell, J. T. Polzer and R. Sadun. 2020. "Collaborating During Coronavirus: The Impact of COVID-19 on the Nature of Work." National Bureau of Economic Research Working Paper No. 27612.

Foster, L., C. Grim and J. Haltiwanger. 2016. "Reallocation in the Great Recession: Cleansing or Not?" *Journal of Labor Economics* 34 (1): 293–331.

Gorlick, A. 2020. "The Productivity Pitfalls of Working from Home in the Age of COVID-19." Stanford News (March 30).

Gregory, V., G. Menzio and D. G. Wiczer. 2020. "Pandemic Recession: L or V-Shaped?" National Bureau of Economic Research Working Paper No. 27105.

Johnson, S. 2020. "A Changing Nation: Population Projections Under Alternative Immigration Scenarios." United States Census Bureau, Population Estimates and Projections, Report No. P25-1146.

Ngo, M. 2020. "Small Businesses Are Dying by the Thousands—And No One Is Tracking the Carnage." Bloomberg News (August 11).

Weingarden, A. 2017. "Job Reallocation and Unemployment in Equilibrium." FEDS Notes. Washington: Board of Governors of the Federal Reserve System (April 20).