GROUP OF TWENTY

G-20 Report on Strong, Sustainable, Balanced, and Inclusive Growth—Online Annex

2021

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*Does not necessarily reflect the views of the IMF Executive Board

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Annex I. Concepts, Definitions, and Measurement

1.   **This annex presents concepts, definitions, and measurement relevant for the assessment of the quality of growth and policies**. Detailed charts for the four dimensions of strong, sustainable, balanced, and inclusive growth (SSBIG) are presented in Annex II.

A.   Strong, Sustainable, Balanced, and Inclusive Growth

2.   **This section describes how strong, sustainable, balanced, and inclusive growth is operationalized across the four dimensions**. While indicators for each of the four individual aspects of growth are listed below, there are important areas of overlap across these four dimensions. For example, the sustainability of growth ultimately depends on growth also being balanced, and vice versa.

- *Strong growth*. This dimension refers to short-term, cyclical growth. Indicators include GDP growth, the output gap, and inflation (in levels and in deviations from inflation targets, where applicable).

- *Sustainable growth*. This dimension refers to medium- and long-term growth. Indicators include potential growth, total factor productivity growth, labor productivity growth, and progress towards tackling climate change.

- *Balanced growth*. This dimension refers to the composition of growth (e.g., domestic versus external demand) and whether there is a build-up of external and domestic imbalances. *External excess imbalances* are derived from the IMF's External Sector Report, which provides estimates of the extent to which current accounts and real effective exchange rates differ from those warranted by fundamentals and desired policies, while taking into account reserve coverage and international investment position indicators. Indicators of *domestic private imbalances* include (non-financial) private sector debt, the debt service ratio for the private non-financial sector, and asset quality ratios. *Domestic public* imbalances are measured by the level of general government gross debt.

- *Inclusive growth*. This dimension refers to the degree of inequality in *outcomes* and in *opportunities*. Indicators of inequality in *outcomes* include the Gini coefficient and the ratio of the bottom income decile to the top income decile (i.e., the average income of the lowest 10 percent of earners relative to the average income of the top 10 percent of earners). The Gini coefficient captures inequality of outcomes in the broadest sense but is highly sensitive to changes in the middle of the income distribution and is less sensitive to changes in the tails of the distribution. The second measure can capture changes in the extreme ends of the income distribution. Indicators of inequality in *opportunities* include measures of access to education and health (e.g., public expenditure on education and health can be an indicative measure of quality and access).

B.   Policies

3.   This section discusses the indicators used for assessing the policy stances across the fiscal, monetary, and structural reform policy areas.

- *Fiscal policy*. The fiscal policy stance is measured as the change in the cyclically adjusted primary balance (CAPB), where the balance is computed in percent of potential GDP. A contractionary (expansionary) fiscal policy stance reflects a positive (negative) change in the CAPB. The current and projected fiscal policy stance reflects the WEO baseline projections. The deviation of the recommended from the projected stance is expressed as the difference between IMF staff's recommended versus projected change in the CAPB. Therefore, IMF staff recommends a more contractionary (expansionary) fiscal stance than the projected one where the deviation of the recommended from the projected change is positive (negative).

- *Monetary policy*. The monetary policy stance is measured as the difference between the actual real policy interest rate and approximations/estimates of the (unobservable) natural real interest rate. A contractionary (expansionary) or tight (accommodative) monetary policy stance reflects an actual real policy interest rate above (below) the natural rate. Given the uncertainty surrounding these measures, the projected baseline path in the heatmaps in the main text is based on IMF staff's assessments, and policy recommendations are expressed as deviations from this path.

- *Structural reforms*. The structural reform policy areas considered are those for which there are quantifiable indicators of structural reforms. These include (i) product market regulation; (ii) trade liberalization; (iii) employment protection legislation; (iv) tax structure reform (direct vs. indirect taxes); (v) Research and Development (R&D) spending; (vi) labor tax wedge; (vii) childcare spending (or other reforms to increase female labor force participation); (viii) active labor market policies; and (ix) unemployment benefit replacement rates. While this set of indicators captures key structural reform needs, it does not necessarily provide a complete description of the structural reform agenda for every country. Structural reform recommendations reflect consensus assessments of the IMF and the OECD and are expressed in terms of reform priorities ("high", "medium", or "low").[1]
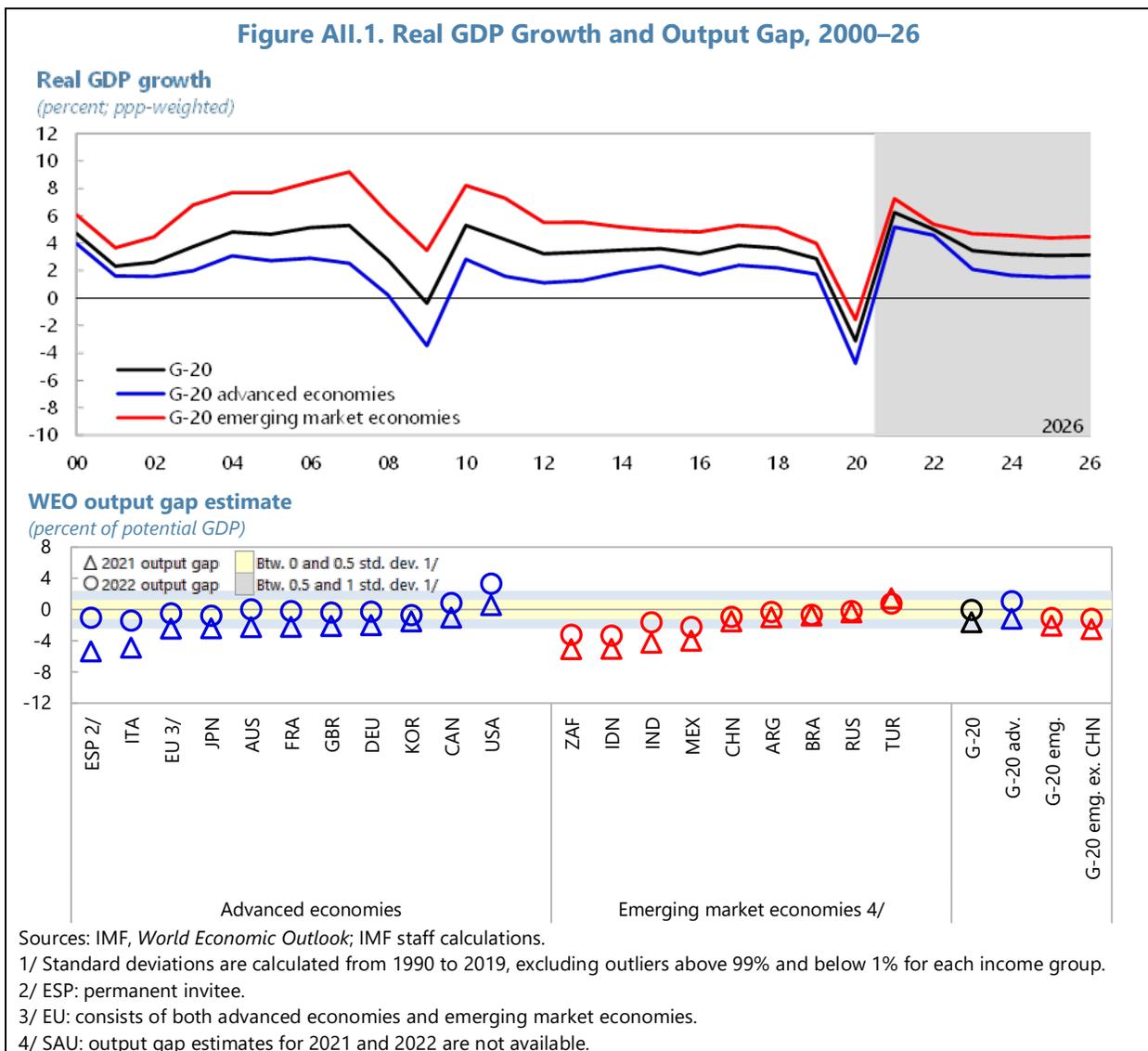
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[1] IMF and OECD recommendations are based on priorities for additional reforms (relative to reforms already incorporated in the baseline), aggregated based on a simple rule. For example, a "high" priority rating requires that both IMF and OECD staff found reforms in a certain area to be very urgent.
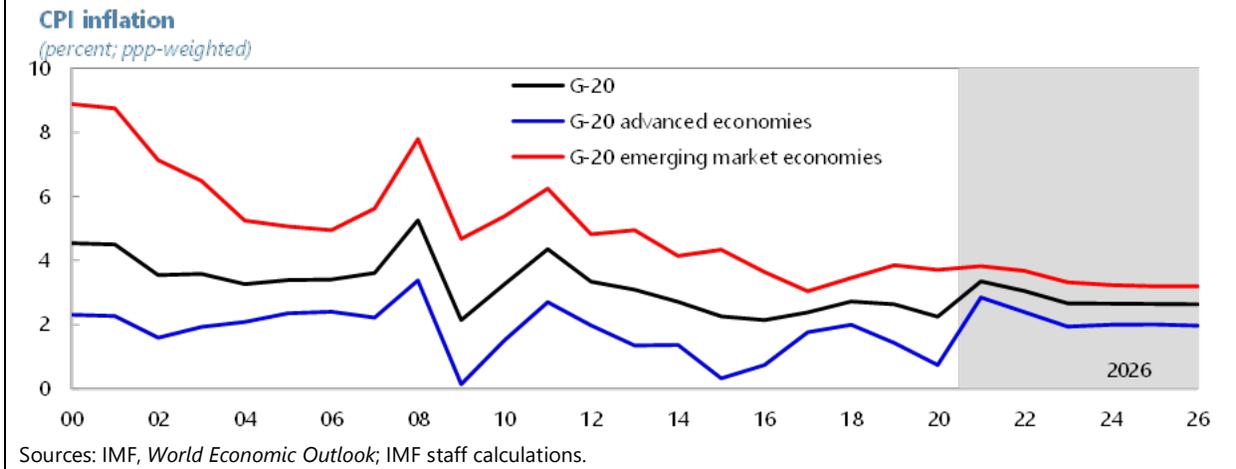
Annex II. Supplementary Charts

1.   **This annex presents statistics on Strong, Sustainable, Balanced, and Inclusive Growth (SSBIG)**. The indicators for SSBIG correspond to those described in Annex I: (i) strong growth; (ii) sustainable growth; (iii) balanced growth; and (iv) inclusive growth. Data are mainly from the October WEO database, complemented with other sources where needed and as specified in footnotes to the charts. Aggregates include the European Union, unless otherwise specified. While the European Union includes both advanced and emerging market economies, for presentational purposes, it is depicted in charts among advanced economies.

A.   Dimension: Strong Growth

Figure AII.1. Real GDP Growth and Output Gap, 2000–26

Sources: IMF, *World Economic Outlook*; IMF staff calculations.
1/ Standard deviations are calculated from 1990 to 2019, excluding outliers above 99% and below 1% for each income group.
2/ ESP: permanent invitee.
3/ EU: consists of both advanced economies and emerging market economies.
4/ SAU: output gap estimates for 2021 and 2022 are not available.

Figure AII.2. Inflation, 2000–26

CPI inflation
(percent; ppp-weighted)

Legend:
- G-20
- G-20 advanced economies
- G-20 emerging market economies

Sources: IMF, *World Economic Outlook*; IMF staff calculations.

B. Dimension: Sustainable Growth

Figure AII.3. Potential Growth, 2000–26

Potential output growth
(percent)

Legend:
- △ 2021
- ○ 2022

Advanced economies: AUS, USA, JPN, ESP 2/, DEU, KOR, CAN, EU 3/, FRA, ITA, GBR

Emerging market economies 1/: ZAF, ARG, BRA, RUS, IDN, TUR, MEX, IND, CHN

G-20, G-20 adv., G-20 emg., G-20 emg. ex. CHN

Sources: IMF, *World Economic Outlook*; IMF staff calculations.
1/ SAU: potential GDP estimates for 2021 and 2022 are not available.
2/ ESP: permanent invitee.
3/ EU consists of both advanced economies and emerging market economies.

Figure AII.4. Productivity Growth, 1980–2019

Productivity growth: Advanced economies 2/
(ppp-weighted; 5-yr center moving average)
- Labor productivity 1/
- Total factor productivity

Productivity growth: Emerging markets 3/
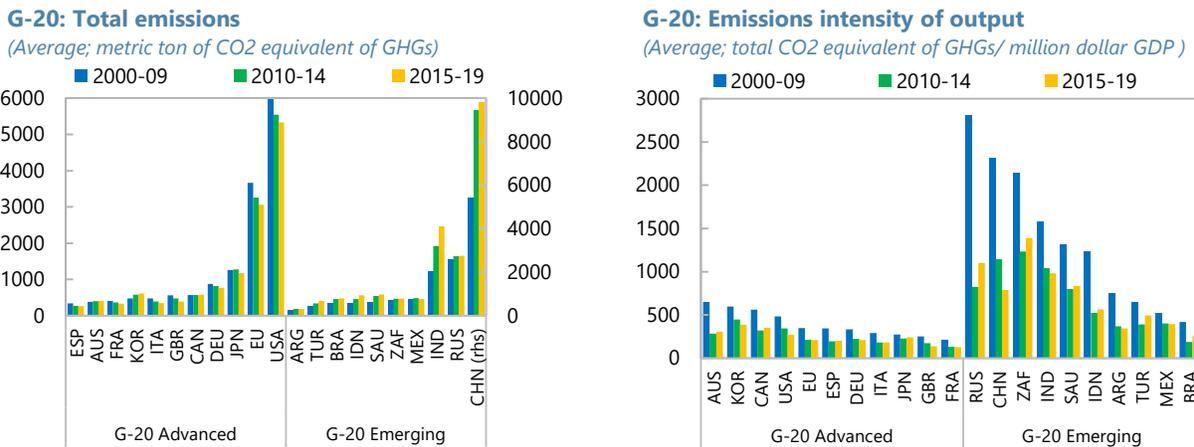*(ppp-weighted; 5-yr center moving average)*
- Labor productivity 1/
- Total factor productivity
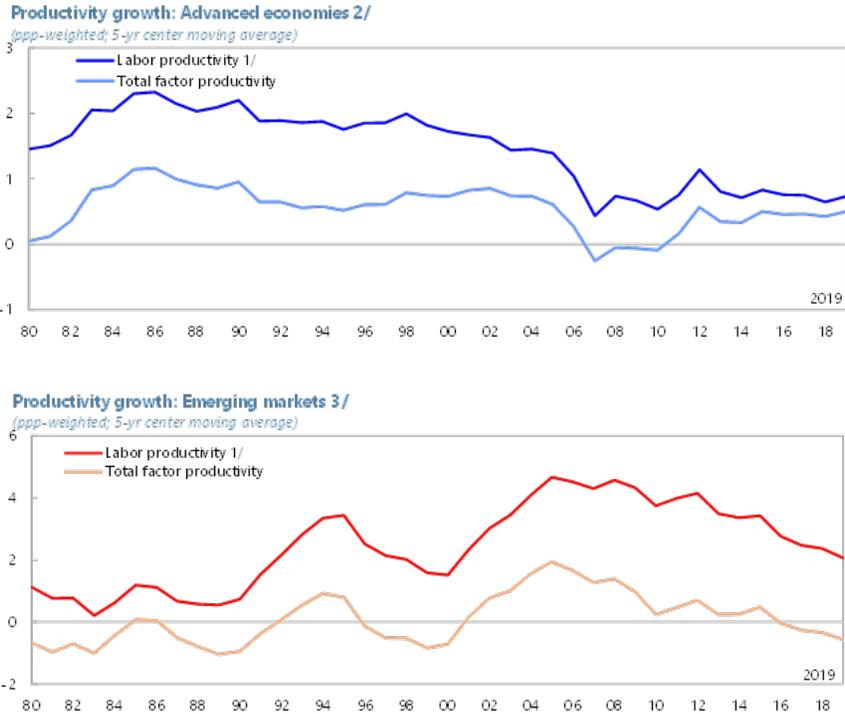
Sources: Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table" American Economic Review, 105(10), 3150-3182, available for download at www.ggdc.net/pwt; IMF, *World Economic Outlook*; IMF staff calculations.

1/ Labor productivity is calculated as real GDP per person employed.

2/ Includes ESP, but not other EU advanced economies due to data limitations.

3/ Excludes RUS, SAU, and other EU emerging market economies due to data limitations.


Figure AII.5. Climate, 2000–19

G-20: Total emissions
(Average; metric ton of CO2 equivalent of GHGs)
- 2000-09
- 2010-14
- 2015-19

G-20 Advanced | G-20 Emerging

G-20: Emissions intensity of output
(Average; total CO2 equivalent of GHGs/ million dollar GDP)
- 2000-09
- 2010-14
- 2015-19

G-20 Advanced | G-20 Emerging

Sources: Global Carbon Project/ClimateWatch; and IMF staff calculations.

C. Dimension: Balanced Growth

Figure AII.6. Current Account Gaps, 2019-20
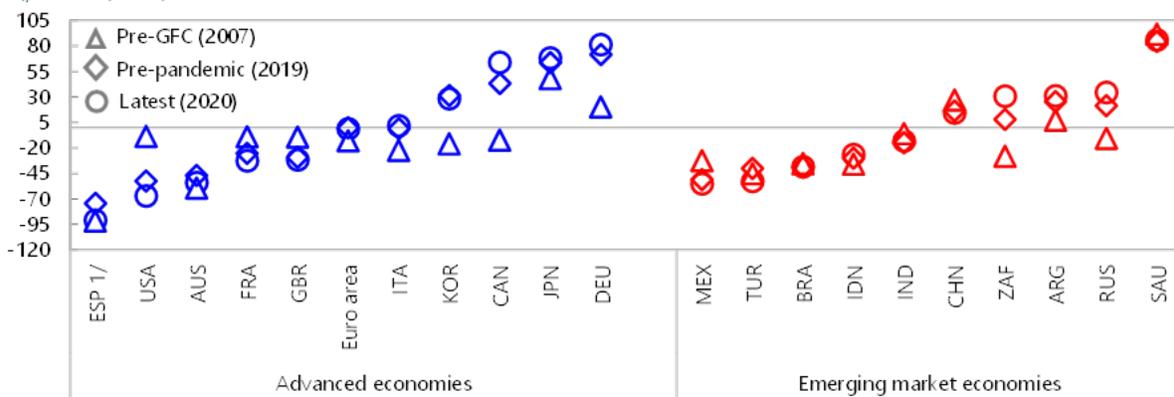
Current account gap, 2020
(percentage points)
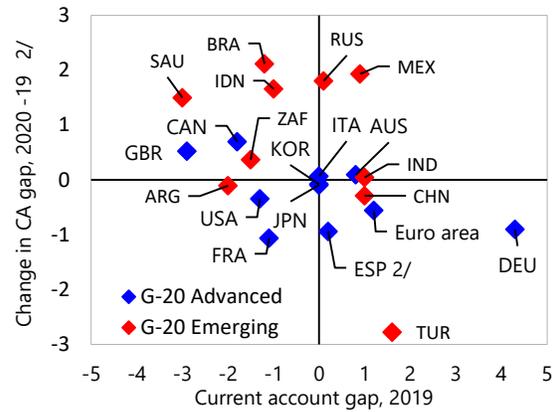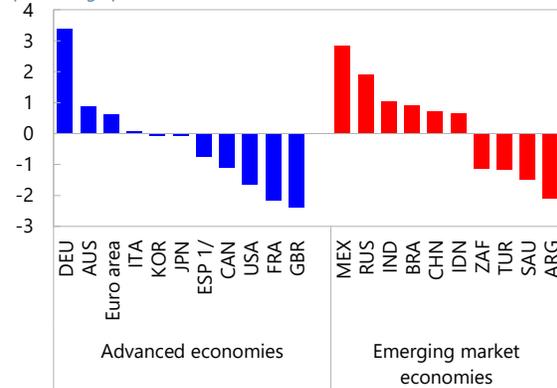
Source: IMF, *External Sector Report*, 2021.
1/ ESP: permanent invitee.
2/ CA denotes the current account. Gaps are relative to IMF staff assessed current account norms.

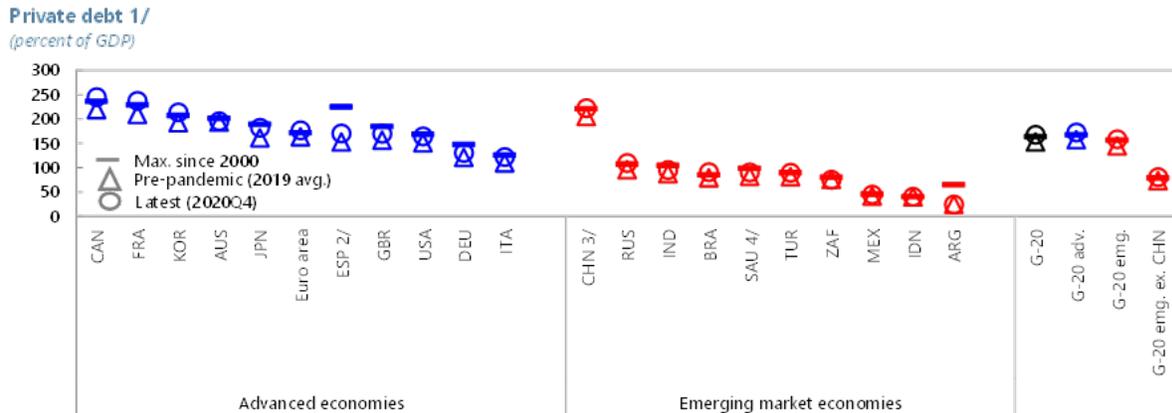## Figure AII.7. Net International Investment Positions, 2007–20

Net international investment position
(percent of GDP)

Sources: IMF, *Balance of Payments Statistics*; IMF, *World Economic Outlook*; IMF staff calculations.
1/ ESP: permanent invitee.

Figure AII.8. Private Non-Financial Sector Debt, 2000–20

Private debt 1/
(percent of GDP)

Sources: BIS; Haver Analytics; IMF, *World Economic Outlook;* IMF staff calculations.
1/ Credit to the private non-financial sector, which includes borrowing by non-financial corporations and households and reflects lending by domestic and foreign banks, as well as holdings of debt securities.
2/ ESP: permanent invitee.
3/ CHN: private debt includes local government financing vehicles (LGFV) debt.
4/ SAU: data expressed in percent of non-oil GDP.

Figure AII.9. Private Non-Financial Sector Debt by Sector, 2019–21

Private debt by sector 1/
(percent of GDP)

Households (2019Q4)   Non-financial corporations (2019Q4)   Total private (2019Q4)
Households (2021Q1)   Non-financial corporations (2021Q1)   Total private (2020Q4)

Sources: BIS; Haver Analytics; IMF, *World Economic Outlook;* IMF staff calculations.
Note: For the legend, blue: advanced economies, red: emerging economies, and purple: G-20.
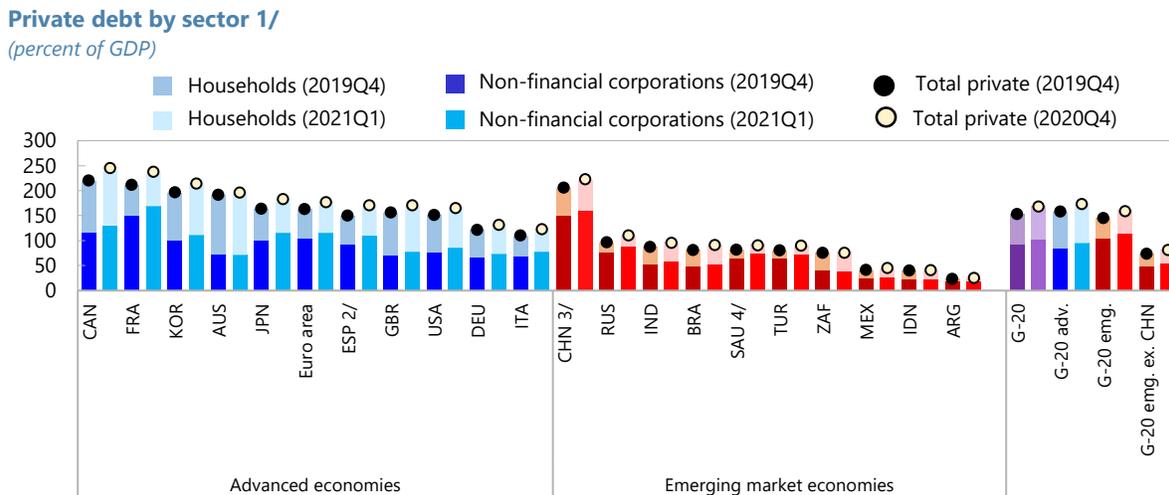1/ Credit to the private non-financial sector, which includes borrowing by non-financial corporations and households and reflects lending by domestic and foreign banks, as well as holdings of debt securities.
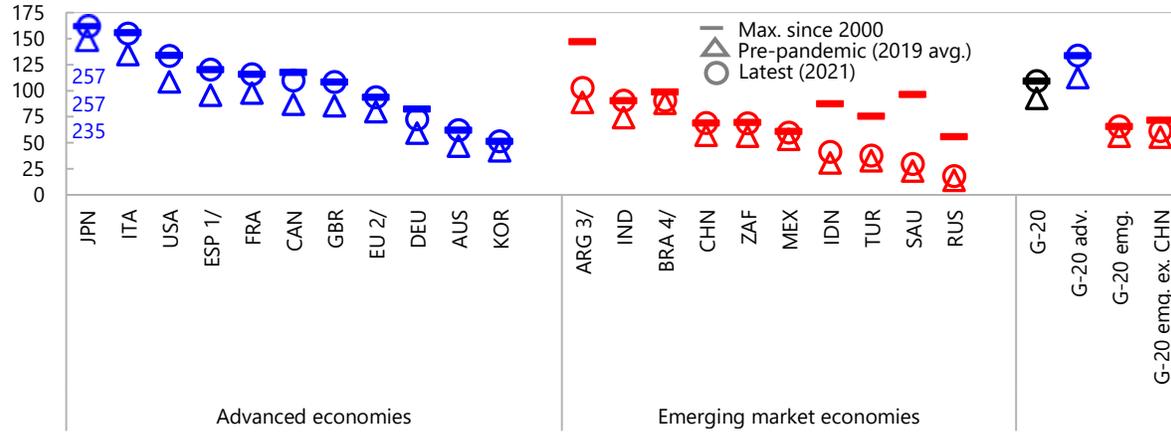2/ ESP: permanent invitee.
3/ CHN: private debt includes local government financing vehicles (LGFV) debt.
4/ SAU: data expressed in percent of non-oil GDP.

Figure AII.10. Public Sector Debt, 2000–21

General government gross debt
(percent of GDP)

Max. since 2000
Pre-pandemic (2019 avg.)
Latest (2021)

Advanced economies

Emerging market economies

Sources: IMF, *World Economic Outlook;* IMF staff calculations.
1/ ESP: permanent invitee.
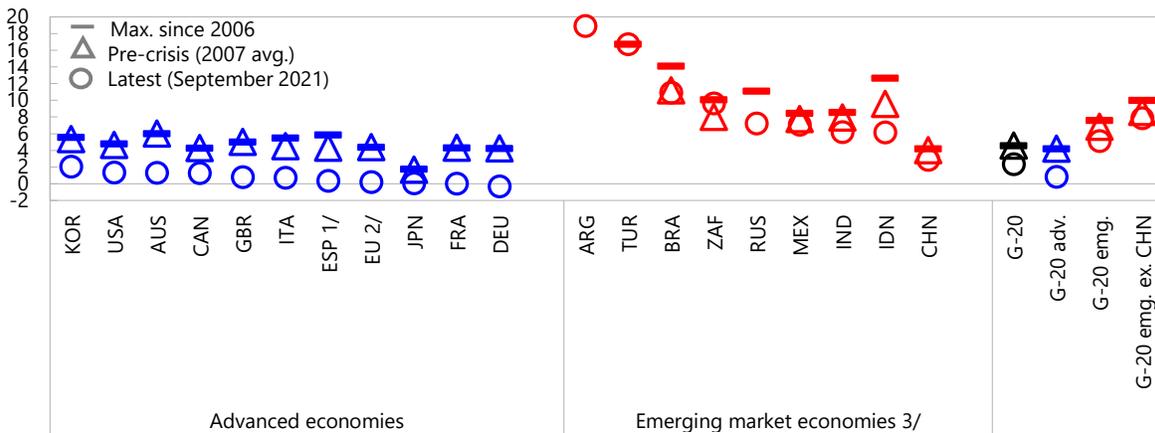2/ EU: consists of both advanced economies and emerging market economies.
3/ ARG: data cover federal government gross debt in percent of GDP. Latest data is 2020.
4/ BRA: general government data refer to the nonfinancial public sector.

Figure AII.11. Sovereign Bond Yields, 2006- 21

10Y sovereign bond yield
(percent)

Max. since 2006
Pre-crisis (2007 avg.)
Latest (September 2021)

Advanced economies

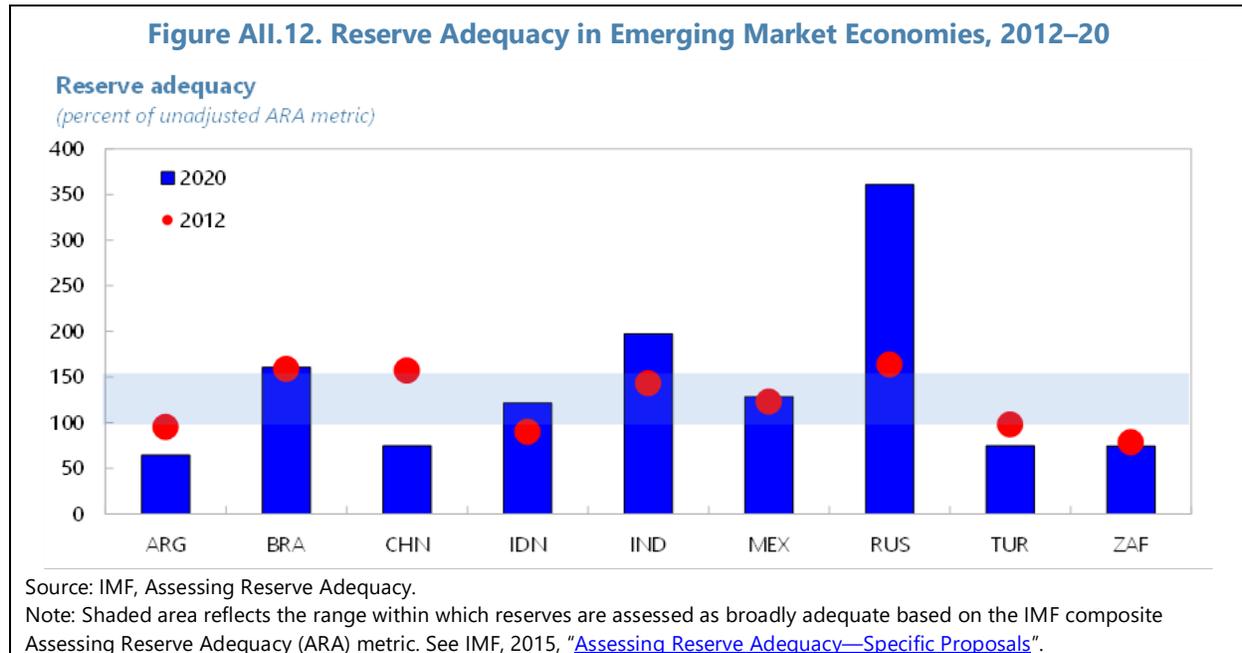Emerging market economies 3/

Sources: Bloomberg L.P.; Haver Analytics; European Central Bank; IMF, *World Economic Outlook*; and IMF staff calculations.
1/ ESP: permanent invitee.
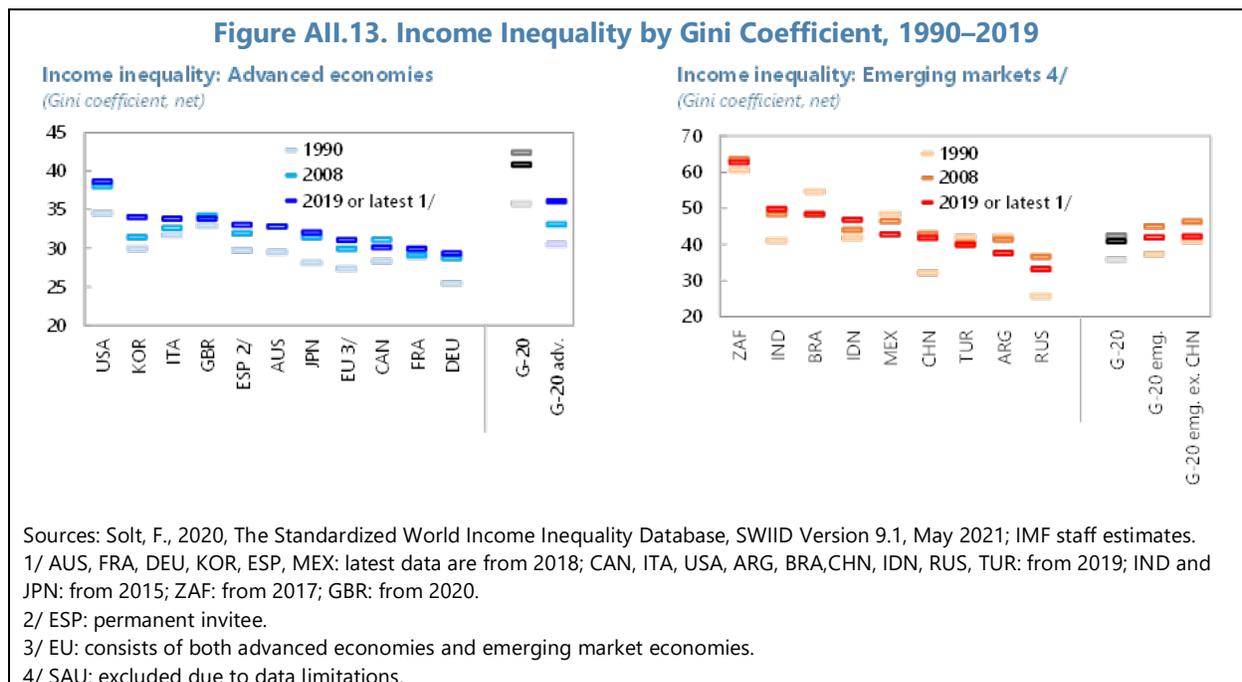2/ EU: consists of both advanced economies and emerging market economies.
3/ ARG: missing historical data due to data limitations; RUS and TUR: data start from 2010; SAU: data start from Oct. 2016. ZAF: latest is July 2021.

International Reserves

Figure AII.12. Reserve Adequacy in Emerging Market Economies, 2012–20

Reserve adequacy
(percent of unadjusted ARA metric)

Source: IMF, Assessing Reserve Adequacy.
Note: Shaded area reflects the range within which reserves are assessed as broadly adequate based on the IMF composite Assessing Reserve Adequacy (ARA) metric. See IMF, 2015, "Assessing Reserve Adequacy—Specific Proposals".

D.   Dimension: Inclusive Growth

Income Inequality Trends (pre-pandemic)

Figure AII.13. Income Inequality by Gini Coefficient, 1990–2019

Income inequality: Advanced economies
(Gini coefficient, net)

Income inequality: Emerging markets 4/
(Gini coefficient, net)

Sources: Solt, F., 2020, The Standardized World Income Inequality Database, SWIID Version 9.1, May 2021; IMF staff estimates.
1/ AUS, FRA, DEU, KOR, ESP, MEX: latest data are from 2018; CAN, ITA, USA, ARG, BRA,CHN, IDN, RUS, TUR: from 2019; IND and JPN: from 2015; ZAF: from 2017; GBR: from 2020.
2/ ESP: permanent invitee.
3/ EU: consists of both advanced economies and emerging market economies.
4/ SAU: excluded due to data limitations.

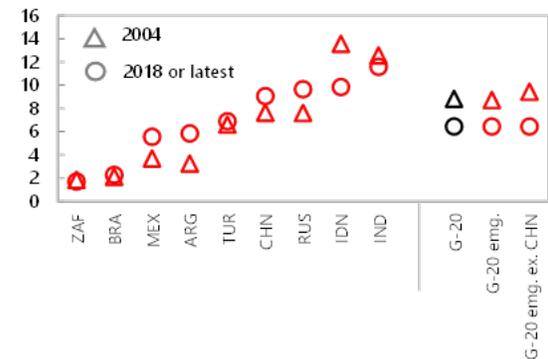**Figure AII.14. Income Inequality by Income Decile, 2004–18**

Income inequality: Advanced economies
(ratio between bottom and top income decile in percent)
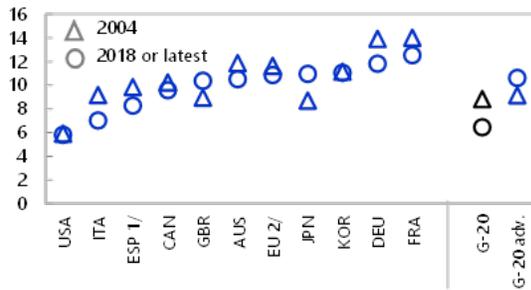
Income inequality: Emerging markets
(ratio between bottom and top income decile in percent)

Sources: UNU-WIDER, World Income Inequality Database (WIID), May 2021; IMF, *World Economic Outlook*; and IMF staff calculations.

Note: Given data limitations, different concepts and coverage to assess inequality are used across countries: CHN, IDN, IND, RUS, ZAF, TUR: Resource concepts – consumption, area coverage – all; ARG: resource concept – (net/gross) income, area coverage – urban; Other countries: resource concepts – (net/ gross) income, area coverage – all. When 2004 numbers are not available, the following are: CHN, IND, ZAF: 2005; KOR: 2006; JPN: 2008. When 2018 numbers are not available, the following are used: AUS: 2014; IND, KOR: 2012; CAN, JPN: 2013; ZAF: 2015; CHN, DEU, GBR, USA: 2016; FRA, ITA, ESP: 2017. No data availability for SAU.
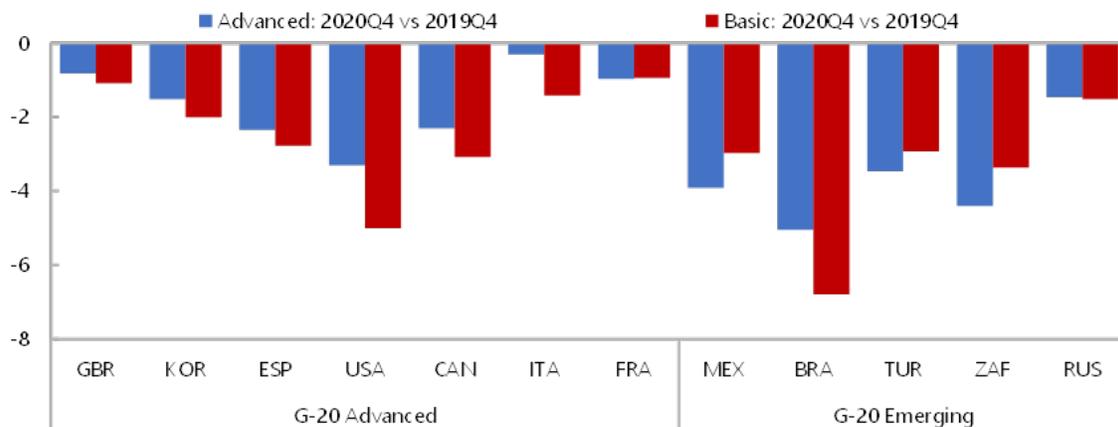1/ ESP: permanent invitee.
2/ EU: consists of both advanced economies and emerging market economies.

Indicative Measures for Inequality in 2020

Figure AII.15. Employment Rate by Skill Level, 2020

**Change in employment rate by skill 1/**
(percentage point)

Sources: International Labor Organization; Country authorities; and IMF staff calculations.
Note: Basic: Lower secondary education and below. Advanced: Tertiary education and above.
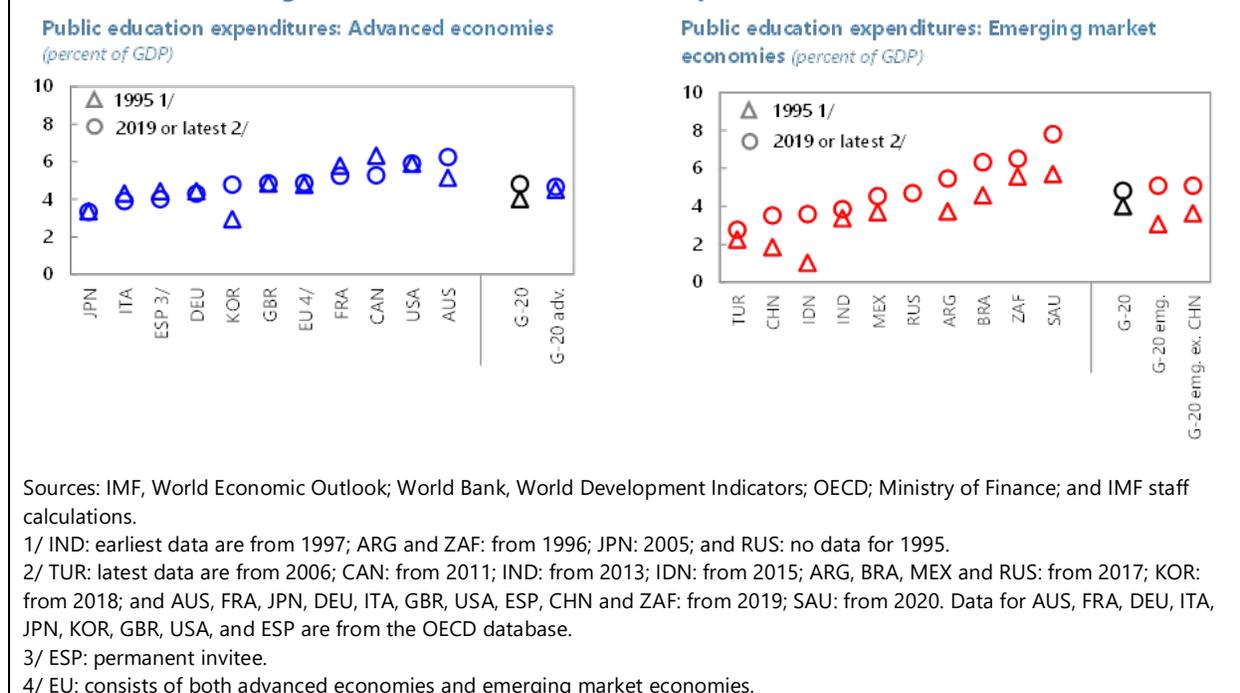1/ 2019Q3 and 2020Q3 data are used for GBR due to data limitation.

Health and Education Spending Trends (pre-pandemic)

Figure AII.16. Public Health Expenditures, 1995–2018

Public health expenditures: Advanced economies *(percent of GDP)*

Public health expenditures: Emerging market economies *(percent of GDP)*

Sources: IMF, *World Economic Outlook;* World Bank, World Development Indicators; IMF staff calculations.
1/ ESP: permanent invitee.
2/ EU: consists of both advanced economies and emerging market economies.
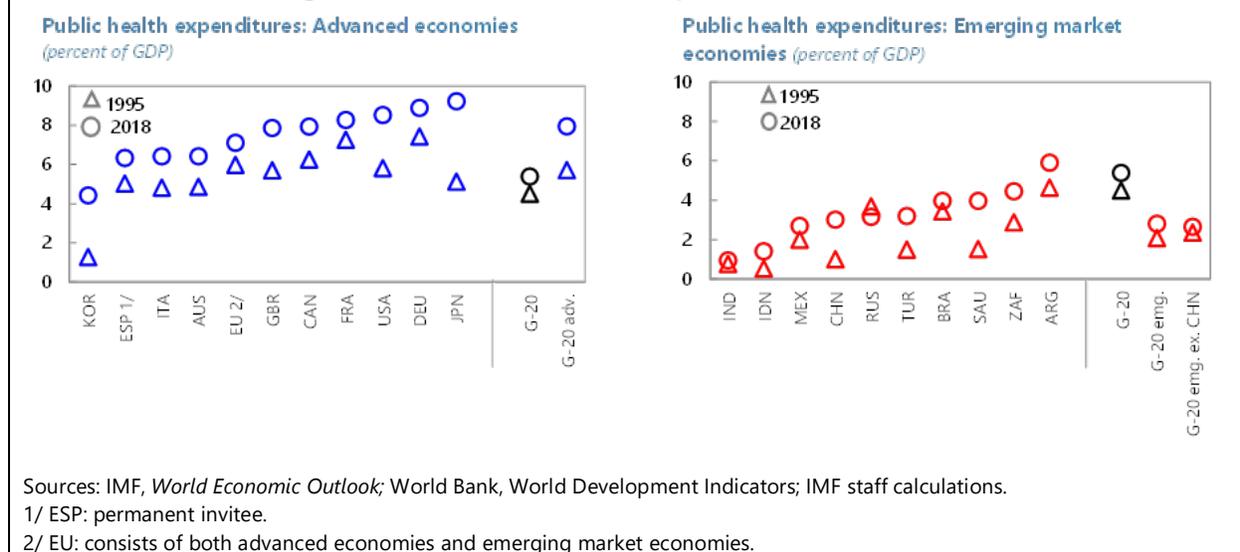
Figure AII.17. Public Education Expenditures, 1995–2019

Public education expenditures: Advanced economies *(percent of GDP)*

Public education expenditures: Emerging market economies *(percent of GDP)*

Sources: IMF, World Economic Outlook; World Bank, World Development Indicators; OECD; Ministry of Finance; and IMF staff calculations.
1/ IND: earliest data are from 1997; ARG and ZAF: from 1996; JPN: 2005; and RUS: no data for 1995.
2/ TUR: latest data are from 2006; CAN: from 2011; IND: from 2013; IDN: from 2015; ARG, BRA, MEX and RUS: from 2017; KOR: from 2018; and AUS, FRA, JPN, DEU, ITA, GBR, USA, ESP, CHN and ZAF: from 2019; SAU: from 2020. Data for AUS, FRA, DEU, ITA, JPN, KOR, GBR, USA, and ESP are from the OECD database.
3/ ESP: permanent invitee.
4/ EU: consists of both advanced economies and emerging market economies.

Annex III. Simulations: Impact of Policy Recommendations

1.   **This annex describes how the impact of implementing recommended policies is estimated and presents simulation results**. The impact on Strong Sustainable, Balanced, and Inclusive Growth is computed using the IMF's G-20 model.[1] The model evaluates the economic impact of a change in policies to reflect IMF staff's recommendations relative to those projected under the current baseline projections in a dynamic general equilibrium setting. The quantification of specific policies is described in section A of this annex. Simulation results are shown in section B.

A.   Quantifying Policy Recommendations

2.   **The simulations are based on a quantification of policy recommendations as follows**:

- *Fiscal policy*. A more contractionary (expansionary) fiscal policy corresponds to a positive (negative) deviation between the recommended and projected changes in the cyclically adjusted primary balance (CAPB). The deviation is quantified by IMF staff's recommendations for the changes in the CAPB.

- *Monetary policy*. A moderately more contractionary (expansionary) monetary stance corresponds to a 75 basis points increase (decrease) in the policy rate relative to the baseline. A substantially more contractionary (expansionary) corresponds to a 150 basis points increase (decrease).

- *Structural reforms*. The simulations assume that recommended structural reforms are gradually implemented over 10 years, starting in 2022. The magnitude of the changes in the structural reform indicators is based on historical episodes of major reforms, with the speed of implementation reflecting the behavior exhibited by G-20 countries in the implementation of their growth strategies so far. Policy recommendations are expressed in terms of reform priorities: "high" priority reforms are implemented as ¾ of the historical magnitude of major reforms; "medium" priority reforms as ½ of the historical magnitude; and "low" priority reforms as ⅓ of the historical magnitude. Reform priorities reflect a consensus assessment by IMF and OECD staff. The quantitative evaluation of the impact of structural reforms on productivity and labor markets is based on a series of OECD analytical papers.[2]
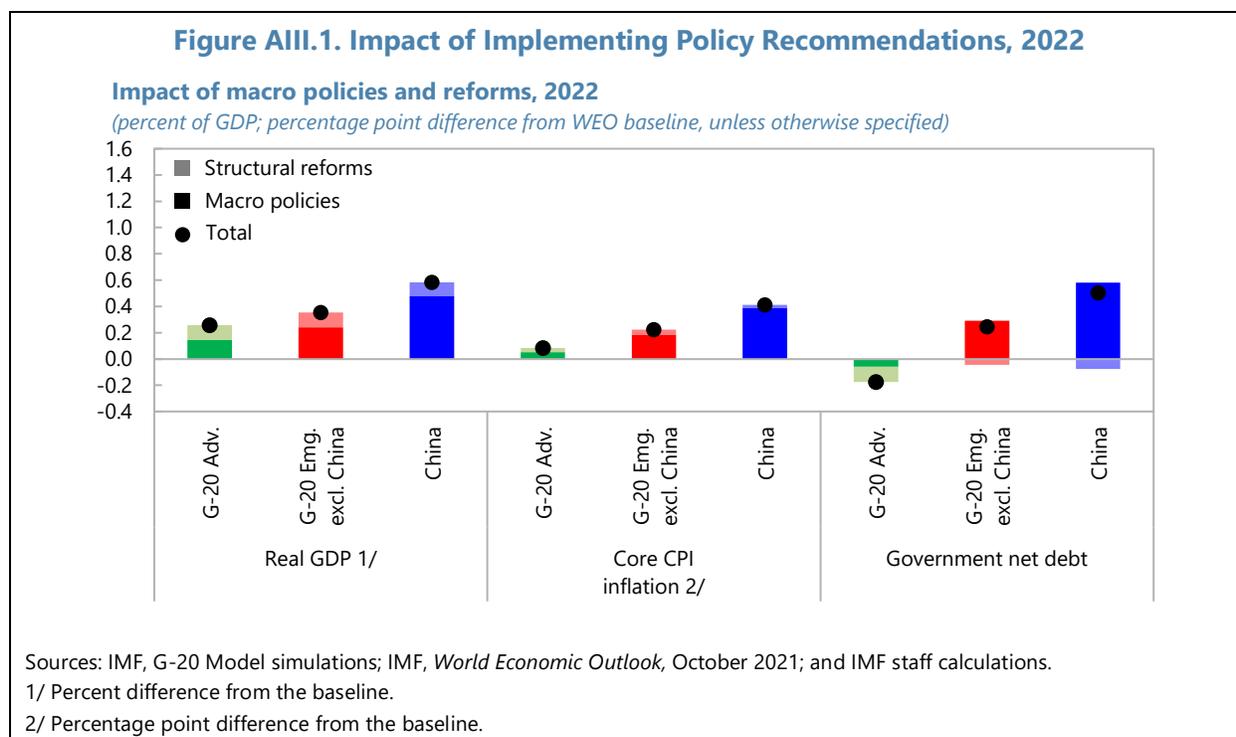
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[1] Andrle, M., P. Blagrave, P. Espaillat, K. Honjo, B. Hunt, M. Kortelainen, R. Lalonde, D. Laxton, E. Mavroeidi, D. Muir, S. Mursula, and S. Snudden, 2015, The Flexible System of Global Models – FSGM, IMF Working Paper No. 15/64.

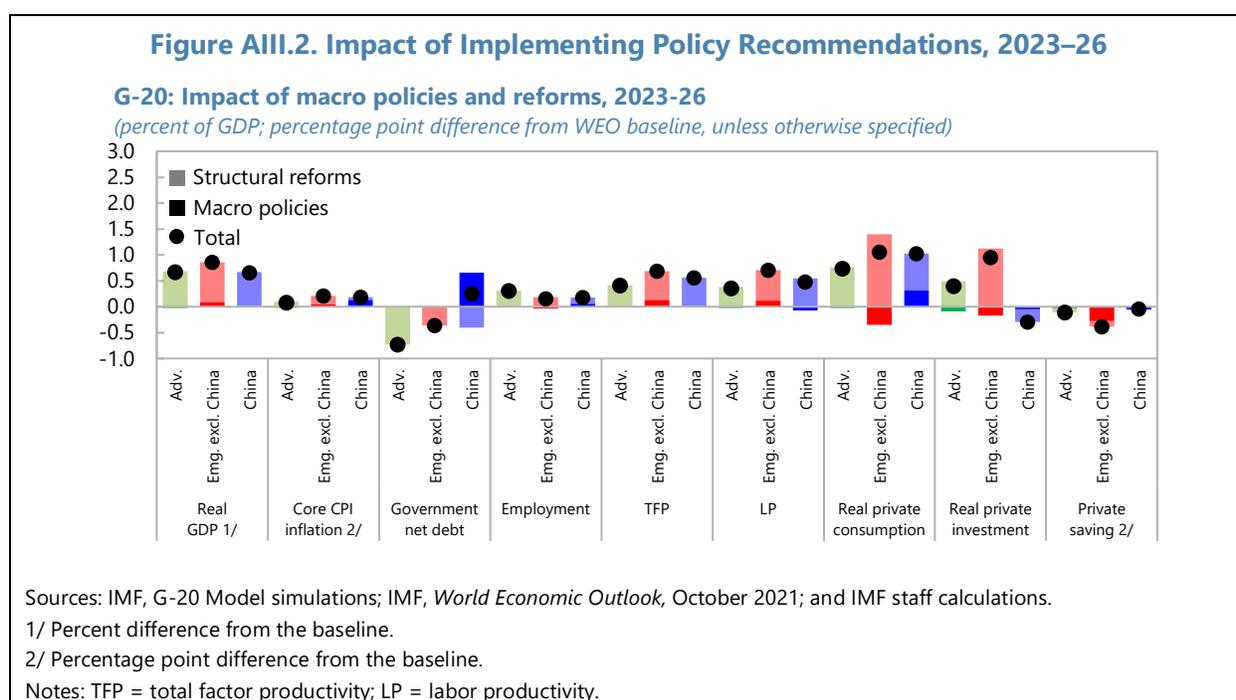[2] Examples include Egert, B. and P. Gal, 2017, The Quantification of Structural Reforms in OECD Countries: A New Framework, OECD Economics Department Working Paper No. 1354; Bouis, R. and R. Duval, 2011, Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond, OECD Economics Department Working Papers No. 835.

B.   Simulation Results: Impact of Policy Recommendations

(i)   Short-Term Impact

Figure AIII.1. Impact of Implementing Policy Recommendations, 2022

Impact of macro policies and reforms, 2022
(percent of GDP; percentage point difference from WEO baseline, unless otherwise specified)

Sources: IMF, G-20 Model simulations; IMF, *World Economic Outlook,* October 2021; and IMF staff calculations.
1/ Percent difference from the baseline.
2/ Percentage point difference from the baseline.

(ii)   Medium-Term Impact

Figure AIII.2. Impact of Implementing Policy Recommendations, 2023–26

G-20: Impact of macro policies and reforms, 2023-26
(percent of GDP; percentage point difference from WEO baseline, unless otherwise specified)

Sources: IMF, G-20 Model simulations; IMF, *World Economic Outlook,* October 2021; and IMF staff calculations.
1/ Percent difference from the baseline.
2/ Percentage point difference from the baseline.
Notes: TFP = total factor productivity; LP = labor productivity.

Annex IV. Survey: Policy and Reform Needs for the Recovery

A survey of IMF country teams highlights the significant efforts undertaken by G-20 economies to combat the twin health and economic crises. Yet, the challenges remain, including from elevated debt levels, scars to human capital, and the need to safeguard financial stability.

1. **Across much of the G-20, fiscal, monetary, and financial policy responses during the pandemic rose to meet the challenges faced.** A survey of IMF country teams highlights that both the amount, design, and implementation of measures was broadly adequate in most economies. For example, while some weaknesses in the support to households were noted (reflecting areas such as insufficient amounts, slow rollouts), particularly in several G-20 emerging market economies, country teams pointed to substantial efforts to protect the most vulnerable.

2. **Teams noted the challenges associated with the rise in debt.** While fiscal support was instrumental in avoiding an even worse slowdown after the onset of the crisis and the majority of G-20 country teams do not expect adverse impacts from the rise in public debt, some teams anticipate that it may weigh on growth and investment over the medium term (Figure 1). In addition, across a majority of economies—in particular advanced economies—higher corporate-sector debt is expected to lead to lower investment, lower growth, and higher bankruptcies. Several teams also expect lower innovation and higher market concentration.

3. **Additional action is needed to ensure a smooth transition from crisis support, as well as to tackle long-standing challenges.** According to IMF country teams, gaps in current plans are particularly salient in emerging market economies, including related to exiting from crisis support, supporting the reallocation of capital and labor, and promoting inclusive and green recoveries (Figure 2). In addition, across a majority of G-20 economies, more action is needed to strengthen the financial sector, including by improving supervision and resolution frameworks, addressing elevated non-performing loans, and enhancing macro-prudential toolkits.


Figure AIV.1. Challenges from Debt

Impact of higher public and corporate debt in the medium term
(share of G-20 countries)
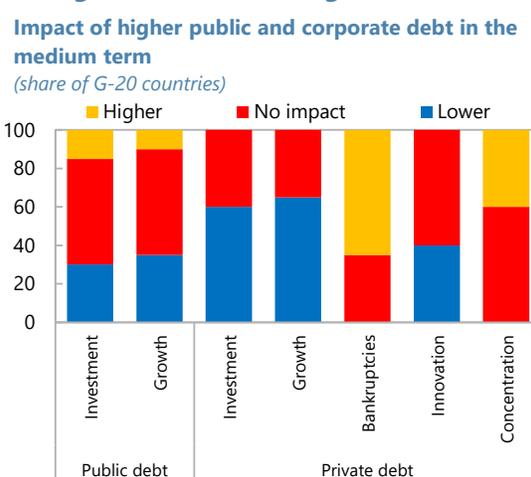
Source: IMF staff estimates.
Note: Impact on investment, growth, bankruptcies, innovation, and market concentration as listed along the horizontal axis. Based on responses for G-19 and *Spain*.

Figure AIV. 2. Assessments of Current Plans

Assessments of current plans
(percent responding plans are adequate)
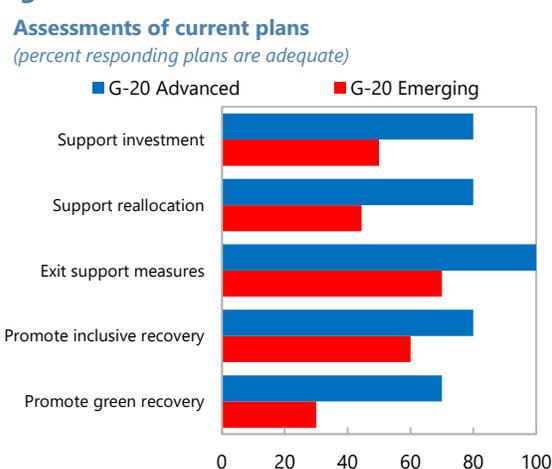
Source: IMF staff estimates.
Note: Based on responses for G-19 and *Spain*.