Annual Review

Title: Macroeconomics Research in Low-Income Countries (MRLIC)		
Programme Value £ (full life): £19,835,983		**Review date:** July 2022
Programme Code: 202960	**AMP start date:** Feb 2012	**AMP end date:** Mar 2025

Summary of Programme Performance (Phase 4)

Year	2020/21	2021/2022
Overall Output Score	A+	**A+**
Risk Rating	Minor	Minor

DevTracker Link to Business Case:	https://devtracker.fcdo.gov.uk/projects/GB-1-202960/documents
DevTracker Link to results framework:	https://devtracker.fcdo.gov.uk/projects/GB-1-202960/documents

A. SUMMARY AND OVERVIEW

Description of programme

Macroeconomic Research in Low Income Countries (MRLIC) is a long-standing partnership between FCDO and the International Monetary Fund (IMF) aiming to promote macroeconomic stability and growth in LICs through improved IMF engagement in those countries. It seeks to achieve this by:

- (i) producing high quality, policy relevant research on macroeconomic issues affecting LICs.
- (ii) ensuring that research products are used by IMF country teams and partner governments.
- (iii) shaping high-level IMF policy positions and strengthening engagement by senior IMF policymakers on LIC issues.
- (iv) widening the field of academics and policymakers working on these issues.

Macroeconomic stability is critical for economic development. LICs are particularly vulnerable to shocks leading to economic instability[1]. Instability deters private investment[2], reduces growth and can lead to deeper poverty and greater risks of conflict. Though macroeconomic stability is not sufficient to guarantee growth, it is a foundation on which growth is more likely to take off. By strengthening countries' economic stability, MRLIC is complementary to FCDO efforts to support firms and promote private investment, for instance through British International Investment. MRLIC is also a strategic collaboration, with support from key stakeholders across HMG. In particular, the UK Delegation to the IMF (UKDEL), HM Treasury (HMT) and the FCDO's International Finance Institutions department (IFID) are strongly supportive of the programme, which helps demonstrate the UK's global leadership on LICs.

Most of MRLIC's research is produced by IMF economists in the IMF Research Department, with some commissioned from external academics. MRLIC research is used to generate policy and practice change at the IMF through engagement on IMF country missions, training for IMF staff and country authorities and engagement with the IMF Board and academic economists. Linking the IMF Research Department, the Strategy, Policy and Review Department and the Institute for Capacity Development helps ensure that the research agenda is relevant to the Fund's policy and is disseminated effectively.

Working with the IMF is an efficient route for shaping macroeconomic policy in the countries where FCDO works. It helps the FCDO achieve breadth and leverages the IMF's comparative advantage in providing macroeconomic policy advice and analysis. Figure 1 depicts the coverage of MRLIC and uptake of its flagship Debt-Investment-Growth tool by IMF country teams, showing good coverage across FCDO priority geographies in Sub-Saharan Africa and the Indo-Pacific. MRLIC research helps inform IMF macroeconomic assessments and its advice. Often conducted in the context of its lending programmes, IMF assessments are highly influential and often a form a pre-requisite for countries obtaining loans from the World Bank, regional development banks or donors. Investing a relatively small

[1] Macroeconomic instability refers to high inflation and large currency fluctuations, or important swings in growth rates. For a brief explainer see how the IMF Promotes Global Economic Stability
[2] Macroeconomic stability, investment and growth in developing countries - ScienceDirect

amount of FCDO research funding to improve the quality and tailoring of these assessments to LIC conditions is cost-effective.

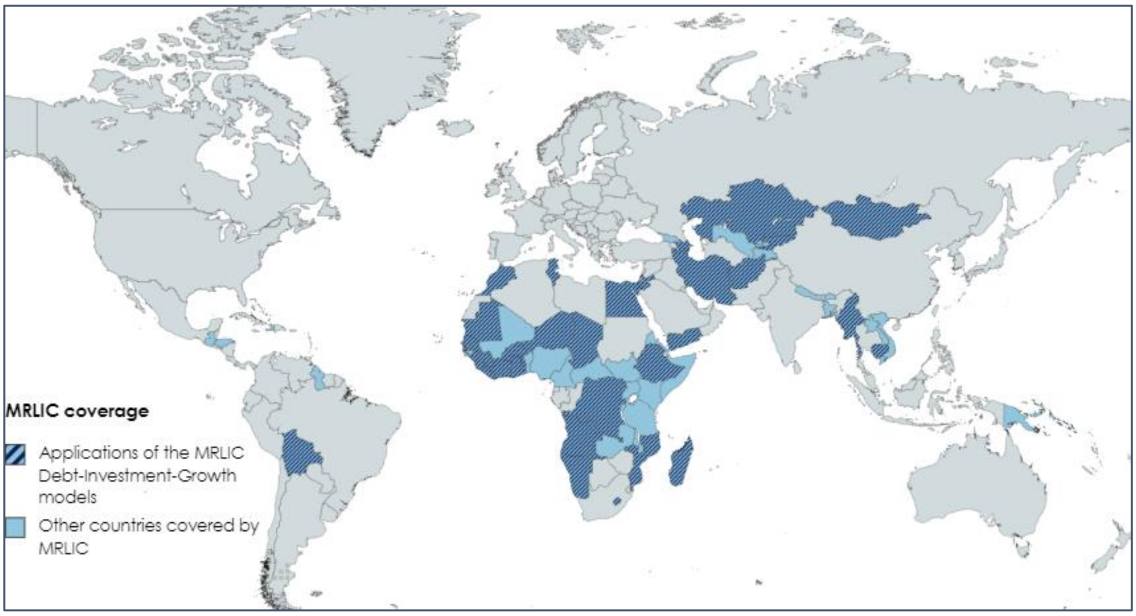
MRLIC started in March 2012. A fourth phase (£5.1m) was approved in 2019. A no-cost programme extension was approved in 2021, reprofiling disbursements and extending the end date to March 2025[3].

Summary supporting narrative for the overall score in this review

This Annual Review scores an A+. At the output level, two outputs score an A+ and two an A. The review covers April 2021 to March 2022. During the reporting period, LICs faced tremendous macroeconomic challenges driven by Covid-19 pandemic, the Russia-Ukraine conflict, and climate change. Key achievements involve MRLIC research being used to inform the IMF's and governments' response to these challenges, as well as shaping IMF positions in new areas. In particular:

MRLIC's work on fragility has informed and shaped the IMF's engagement in fragile states, including its new IMF Strategy for Fragile and Conflict-Affected States (FCS) launched in 2022. MRLIC pioneered research on macroeconomics and fragility, notably by producing a book on Macroeconomic Policy in Fragile States. This was disseminated within the IMF through a training course on macroeconomics of fragile states[4] and number of high-profile events in 2021/22 (See Output 3). This research informed the IMF's new Fragile and Conflict Affected States Strategy launched in March 2022. The IMF and FCDO also organised a fragility conference in June 2022 with participation of Nick Dyer, FCDO Director General for Development & Humanitarian (outside of the review period).

Figure 1: Coverage of MRLIC research programme and uptake of DIG models[5]



MRLIC continued to develop and apply its models on Debt, Investment and Growth, helping countries navigate trade-offs between investing for growth and climate adaptation while keeping debt sustainable. Over the years, there have been more than 65 applications of DIG models by IMF country teams in their macroeconomic assessments. These documents often form the basis for IMF lending support and advice to LIC governments. Figure 1 shows where the models have been used.

- This year applications of the DIG models continued to support policy in LICs, including e.g. in **Rwanda,** to show that building adaptation infrastructure could reduce up to two thirds of GDP losses caused by a natural disaster; in **Uganda**, to estimate the gains from structural reforms; in **Guinea**, to analyse risks of reliance on the mining sector. (See Output 2 for more examples).

[3] The rephasing extends the end date by two years to 2025, while the total amount kept unchanged at £5.1m for Phase 4.
[4] The training course was delivered from September 2020 – January 2021. The programme targeted IMF desk economists and mission chiefs working on FCAS, with a focus on tools, policy design, and implementation challenges.
[5] MRLIC coverage includes countries eligible for the IMF concessional financing under the Poverty Reduction and Growth Trust (PRGT) as of 2013, includes the countries that had graduated since then (e.g., Mongolia) but continued to face similar policy challenges. The aim of MRLIC is to focus on the problems that are of particular relevance to LICs, once an analytic toolkit becomes operationalized or "mainstreamed",

- MRLIC also produced an expansion of the model, focused on climate adaptation: the Debt-Investment-Growth-Natural-Disasters (DIGNAD) model. In the pilot case in **Samoa,** DIGNAD simulations demonstrated that adaptation investment would promote debt sustainability, even with significant upfront concessional borrowing. Applications of the DIGNAD model to **Bangladesh**, **Timor-Leste**, and **Madagascar** are forthcoming.
- To further mainstream these tools, MRILC launched a new online course on the IMF Training Portal Public Debt, Investment, and Growth. The DIG and DIGNAR Models. The course, which is open to government officials, explains how to analyse the relation between public investment, growth, and public debt dynamics, using flagship models developed by MRLIC research.

Finally, building on previous research, MRLIC swiftly responded to the food insecurity crisis by facilitating policy discussions at the IMF to be more specific to LICs and to demonstrate the macro-criticality of food insecurity. Building on earlier research, the MRLIC team organized a high-level conference to discuss food insecurity in SSA at the October 2021 IMF-World Bank Annual meetings, and identify viable options to improve the availability, access, and uses of nutritious foods. The team provided internal presentations to shed more light on the urgency to act and provided tailored tools to policymakers in what countries through IMF country teams. Additionally, the team produced a note on the spillovers from the war in Ukraine to LICs highlighting their dependence on food imports and proposing key policy recommendations. This note was shared widely with relevant FCDO teams and helped inform FCDO's analysis on food insecurity.

This strong performance was achieved despite a difficult context and challenges:

- Annual funding from FCDO was reduced from £1.7m to £0.8m in light of the reduction in ODA. The programme was able to secure funding from the COVID-19 Crisis Capacity Development Initiative (CCCDI), which funded by external partners[6] for one year. This is in line with the recommendation in previous Annual Review to diversify funding sources, however the CCCDI funding was only available for one year and the programme was not able to secure additional resources. See Section F for more details.
- Multiple crises led to increased requests from IMF membership on the MRLIC team and weighed on the speed of the production of longer-term MRLIC research outputs.

Major lessons and recommendations for the year ahead

MRLIC continues to produce highly relevant research and tools that help inform countries' policies and shape global understanding on how shocks affect LIC economies. This research has continued to prove its usefulness in the context of the severe macroeconomic shocks currently affecting LICs. However, the reduced funding and difficulties in securing longer-term sources of funding including from the IMF is a challenge. The assumption that the greater visibility of MRLIC among IMF seniors would increase the probability of IMF funding LIC research itself has not yet been validated. It is also not clear that other donors are interested in funding MRLIC core areas of macroeconomic support to LICs.

Recommendation: Given limited resources, MRLIC should review the scope of its research agenda, to prioritise it towards the most pressing macroeconomic challenges facing LICs and particularly where there is demand and engagement with IMF. The FCDO and advisory committee should support this prioritisation.

Recommendation: The logframe should be reviewed to account for the lower level of resources, streamlined.

[6] CCCDI is a capacity development project to help fulfill the urgent need to support policymaking in low-income countries and low-end emerging market economies, focusing on climate change and inequality under the COVID-19 pandemic. The CCCDI is supported by the following partners: Belgium, Canada, China, Germany, Japan, Korea, Spain, Singapore, and Switzerland. The CCCDI funding for the fiscal year 2022 amounts to USD 1.2 million.

B: THEORY OF CHANGE AND PROGRESS TOWARDS OUTCOMES

Summarise the programme's theory of change, including any changes to outcome and impact indicators from the original business case.

This programme was initiated in 2012. The Theory of Change[7] is summarised below. The ToC remains valid and successive Annual Reviews have provided evidence from the output and, to some extent, the outcome stage.

OUTPUT 1	High quality, policy relevant research on macroeconomic issues affecting LICs produced.
OUTPUT 2	IMF research products (policy analysis, practical and operational tools and frameworks) produced under this project used by IMF country teams and partner authorities.
OUTPUT 3	Engagement by senior IMF policymakers on issues affecting LICs strengthened through this project.
OUTPUT 4	IMF strengthens research capacity, by expanding the network of researchers and policy makers working on LIC macroeconomics

OUTCOME	Better engagement by IMF policymakers on LIC-specific macroeconomic issues, leading to improved policymaking in specific project thematic areas.

IMPACT	Better macroeconomic policymaking in LICs leading to faster economic growth, job creation and poverty reduction.

Describe where the programme is on/off track to contribute to the expected outcomes and impact. What action is planned in the year ahead?

The programme is on track to meet its expected outcome: *Evidence of improved IMF policymaking and integration of LIC-specifics in project thematic areas*. As described in Section A, some of the key thematic areas where the outcome was achieved in 2021/22 were shaping IMF and country response on to tackle food insecurity and enhancing the integration of LIC aspects in IMF policy discussion of debt sustainability under climate-related challenges. However, the reduction in funding and challenges in leveraging further IMF funds limits the long-term outcome of the programme. Prioritisation is needed to ensure value for money.

MRLIC also continued to shape IMF policymaking across areas previously reported on in the 2021 Annual Review[8], including informing the IMF's response to COVID-19 in LICs and advising on debt-growth policy in LICs, especially in the context of the pandemic. Much of this impact is based on the development and dissemination of the Debt-Investment-Growth (DIG) model and its extensions as described elsewhere in this report.

Following through on a recommendation made in the previous Annual Review, the MRLIC team has also made progress in terms of describing the outcomes in country although this could go one level further to discuss actual macroeconomic impacts – although attribution will be a very difficult.

Finally, while outcome of the programme is about policy, it is worth noting the growing academic impact of MRLIC's publications. Citations of MRLIC research papers increased to 3,326 from 1,742 reported last year. This leads to the average of 15 citations per article, with 40 articles cited more than 20 times.

In the next year, to increase the effectiveness of MRLIC, the aim is to strengthen prioritisation to ensure that the research that is produced is strategically tailored to the most important and under-researched policy challenges faced by LICs and on which IMF is well-placed to advice on.

[7] The original Business Case did not specify a formal Theory of Change (ToC) however the implicit ToC for the program is summarised in its logical framework and subsequent Annual Reviews.
[8] In 2020/21 The IMF Chief Economist Gita Gopinath stated "*[MRLIC] was able to make strong contributions with solid research analyses to assist IMF country teams and policymakers to confront this crisis. First, the team put together notes on policy issues related to COVID-19 to help country teams assess the pandemic impacts and appropriate policy responses. Second, the team held high-level policy conferences to engage top experts to discuss COVID-19 implications in low-income countries. And third, the team contributed to the World Economic Outlook reports with analytical pieces that shed light on distributional aspects of the COVID-19 crisis. These contributions would have not been possible without the partnership with the FCDO*

Justify whether the programme should continue, based on its own merits and in the context of the wider portfolio

The programme should continue. MRLIC generates critical research on macroeconomic issues. In turn, the research, toolkits, training and analyses produced by MRLIC serve to improve how the IMF engages in LICs as well as to increase the macroeconomic policymaking capabilities of LIC government officials.

The impact of this work is to improve macroeconomic decision making and outcomes, and this programme has already demonstrated it can improve decision-making on public investment and debt sustainability. This is particularly crucial at a time when LICs are faced with tremendous external shocks. Improved decision-making is essential to restore macroeconomic stability, which is an important pre-condition to attract private investment and generate growth.

MRLIC is also a strategic collaboration, with support from key stakeholders across HMG. In particular, the UK Delegation to the IMF (UKDEL), HM Treasury (HMT) and the FCDO's International Finance Institutions department (IFID) are strongly supportive of the programme, which helps demonstrate the UK's global leadership on LICs. The MRLIC research programme helps deliver credibility, soft power and strengthened relationships within the IMF and Board, that UKDEL, HMT and IFID are able to use to help advance HMG goals at the Fund. The Programme Responsible Officer (PRO) provides regular updates to UKDEL and IFID on upcoming MRLIC research and policy work.

MRLIC's exclusive focus on macroeconomics makes it unique within the portfolio of the Growth Research Team (GRT) and FCDO's Research and Evidence Directorate. This adds value to the remainder of the portfolio which examines largely microeconomic issues. MRLIC continues to fill a clear gap in the academic world, where few economists produce good quality, policy-relevant macroeconomic research for LICs. While IMF is a crucial channel of macroeconomic policy advice in LICs, without FCDO support, it is unlikely that this research area would be sufficiently funded. LICs do not present a systemic challenge to the *global* financial system. The fact that the reduction in funding in 2021/22 has not been compensated by the IMF or other donors suggests that this research area still requires championing by the UK.

Finally, MRLIC continues to perform well, achieving output and outcome targets, and has continued to shape IMF policy especially in the context of Covid-19. MRLIC also has a strong historic performance record, consistently scoring A++ or A+, and therefore consistently delivering value at a relatively low annual cost to the FCDO (£800,000 per year).

C. DETAILED OUTPUT SCORING

Output Title	High quality, policy relevant research on macroeconomic issues affecting LICs produced.		
Output number:	1	Output Score:	A
Impact weighting (%):	30%	Weighting revised since last AR?	No

Indicator(s)	Milestone(s) for this review	2022
1.1 Number of priority research papers or book chapters produced, on the following research topics: 1) Monetary and exchange rate policies, 2) Public investment, growth, and debt sustainability, 3) Macroeconomic management of natural resources, 4) Macroeconomic policies and income distribution, 5) Financial deepening for macroeconomic stability and sustained growth, 6) Growth through diversification, 7) Gender and macroeconomics, 8) Capital flows.	By March 2022 H (167 papers) M (160 papers) L (155 papers)	*162 cumulative (14 in past year)* *Met medium target*
1.2 Number of research papers accepted for publication in appropriate high-quality peer-reviewed journals	By March 2022: H (99 papers) M (95 papers) L (91 paper)	*98 cumulative (8 in past year)* *Met medium target*

Briefly describe the output's activities and provide supporting narrative for the score.

This output scores A. Performance on the two indicators met the medium target. This output measures MRLIC's ability to produce high quality research papers. This year the research production process was affected by the reduction and uncertainty in FCDO funding. Nonetheless the programme continued to produce research across the full range of MLIRC themes, and earlier papers were accepted in academic journals, signalling that the high quality has been maintained. Going forward the challenge is to prioritise thematically to ensure that the limited research funds are adequately targeting the most critical macroeconomic issues affecting LICs rather than more general macroeconomic research.

MRLIC's research is generated by IMF staff and external academics. It covers five areas listed below and has in recent years also focused on major economic challenges such as Covid-19.

- Modelling and understanding policy choices (e.g. monetary, fiscal, structural policies).
- Understanding macro-financial linkages (e.g. financial deepening, capital flows)
- Promoting structural change (e.g. public investment, growth and debt sustainability).
- Enhancing inclusion (e.g. macroeconomic policy and income distribution, gender).
- Building resilience (e.g. natural disasters, climate change, migration, conflict).

Indicator 1.1: Working papers (WPs)

MRLIC produced 14 working papers in the past year, including 4 book chapters[9], bringing the total to 160 over the programme to date. This meets the medium target. IMF working papers are high quality[10] and go through a strict quality assurance process within the Fund. Annex A summarises all publications in more detail, but the following illustrate the breadth of MRLIC research:

- An article published in *Energy Economics* shows the response of inflation to gasoline price shocks is smaller but more persistent and broad-based in developing economies and that the distributional impact is more progressive in developing countries.
- An IMF departmental paper analyzed the performance of IMF's Forecasting and Policy Analysis Systems (FPAS) Capacity Development (CD), which is an important IMF vehicle for monetary policy technical assistance in central banks.

[9] Following the 2021 Annual Review, as an effort to streamline the logframe and reflect the difficulty of making books publicly available, indicator 1.3 on book publication was removed. If chapters or working papers funded by MRLIC become freely available, they should be counted under output indicator 1.2.
[10] The IMF WP series is ranked in the top 25 for economics. IDEAS/RePEc Aggregate Rankings for IMF Working Paper Series, accessed 18th June 2020. IMF Working Papers ranked number 23.https://ideas.repec.org/top/top.wpseries.all.html

- An MRLIC-funded chapter in the book "*The Global Informal Workforce: Priorities for Inclusive Growth*", investigated the relationship between informality and gender gaps in Sub-Saharan Africa, finding education is usually more relevant for women as a driver of informal employment.
- Analysis on the drivers of remittance flows during the Covid-19
- One working paper showed that climate shocks reduce the positive effect of foreign direct investment (FDI), Official Development Assistance (ODA), and migrants' remittances on economic expansion; and another argued for transferring clean energy technologies from advanced economies to emerging market and developing economies.
- MRLIC research has also shown the macro-criticality of education with a paper estimating economic costs due to the loss-of-learning caused by the Covid-19 pandemic, and another more general paper on epidemics and human capital in developing countries.

Further, MRLIC contributed to the production of a new IMF book on How to Achieve Inclusive Growth, commissioning two chapters: on Labor Markets and Financial Globalization, hosting the editors as IMF visiting scholars and ensuring free and open access to the volume.

Indicator 1.2: Peer-reviewed published papers

This year MRLIC had eight papers accepted for publication in peer-reviewed journals, including in some prestigious economic journals, bringing the cumulative total to meeting the medium target. The breadth of publications is wide, and one paper produced by MRLIC was not counted under this output as it was less directly related to LIC issues.

1. Building back better: How big are green spending multipliers? *Ecological Economics*.
2. The distributional implications of the impact of fuel price increases on inflation. *Energy Economics*.
3. The welfare implications of exchange rate choices in developing agricultural economies *Journal of Macroeconomics*
4. Will the AI revolution cause a great divergence? *Journal of Monetary Economics*
5. Growth-equity trade-offs in structural reforms *Journal of Political Economy*.
6. The role of productivity, transportation costs, and barriers to intersectoral mobility in structural transformation *Economic Modelling*.
7. The Distributional Effects of Government Spending Shocks in Developing Economies. *Review of Development Economics*.
8. Serving the Underserved: Microcredit As a Pathway to Commercial Banks. *Review of Economics and Statistics*.

Progress on recommendations from the previous AR, lessons learned this year and recommendations for the year ahead

MRLIC continues to produce high quality relevant research on issues affecting LICs, which in part contribute to addressing immediate challenges faced by LICs such as rising energy prices and inflation, rising debt, loss of human capital, and the challenges of achieving structural transformation.

Recommendation: Given limited funds, ensure that the research produced by MRLIC remains tightly focused on macroeconomic issues affecting LICs, rather than spreading across other areas that might be of less relevance or already well covered by other funding for economic research. The FCDO and the advisory committee should be consulted to provide advice on this prioritisation.

Progress on previous recommendations from previous AR:

Recommendation	Progress
FCDO and IMF to move forward with the advisory committee	The IMF MRLIC team and FCDO have confirmed the list of members for the advisory committee as well as the terms of reference. It was agreed to delay the date of the first meeting until after there was more clarity on the budget.

Output Title	IMF research products (policy analysis, practical and operational tools and frameworks) produced under this project used by IMF country teams and partner authorities.		
Output number:	2	Output Score:	A+
Impact weighting (%):	30%	Weighting revised since last AR?	No

Indicator(s)	Milestone(s) for this review	Progress 2022
2.1 Application and use of tools and frameworks **by IMF country teams.** Of which, courses offered to IMF staff. Sub-indicator 2.1.a.(*new indicator*)	By March 2022, evidence of number of country teams applying policy tools and frameworks: H (142) M (138) L (134) *Of which*, courses offered to IMF staff H (7) M (6) L (5)	*143 cumulative (14 in 2021/22)* *Exceeded high target* *2.1.a. 8 cumulative (5 in 2021/22). Exceeded high target*
2.2 Application and use of tools and frameworks by **country authorities.** Of which: Sub-indicator 2.2.a. Courses offered to country authorities	By March 2021, evidence of number of country authorities applying policy tools and frameworks: H (57) M (56) L (55) Courses offered to country authorities H (28) M (26) L (25)	*60. (6 in 2021/22). Exceeded high target* *2.2.a. 30. (5 in 2021/22). Exceeded high target.*

Briefly describe the output's activities and provide supporting narrative for the score.

This output scores an A+. All output indicators and sub-indicators exceed the high target. Despite continued limits on travel during the review period, the application of MRLIC tools by IMF country teams has picked up compared with the previous year. The MRLIC tools are becoming mainstreamed in IMF country team practice, including new tools such as the extension of the Debt-Investment-Growth model to cover adaptation/natural disasters (DIGNAD). MRLIC has continued to provide a strong offering of courses for both IMF staff and country authorities.

Indicator 2.1: Applications by IMF country teams
There were 14 instances of applications of MRLIC work by IMF country teams. This brings the cumulative total to 143, meeting the high target. The country applications usually consist of (a) instances of MRLIC research and tools (in particular, the DIG models) being used in analysis to support policy papers in country such as Article IV reports[11], selected issues papers etc. and (b) courses offered to IMF staff in country. This year, there were nine applications of the former type (details in Annex).

1. Analysis in the Uganda Article IV Staff Report that estimates the economic gains from structural and fiscal reforms
2. Article IV Staff Report on Guinea showing that energizing the non-mining sector will help diversify the economy and reduce vulnerabilities to external shocks
3. A Selected Issues Paper (SIP) on Gambia uncovered that under the current and planned policies, the Gambia's infrastructure gap will reach about 15% of GDP in 2030, while an improvement in public policy management could fill up to two thirds of the gap.
4. A Staff Report on Madagascar's IMF lending programme highlighted the country's infrastructure gap and the importance of raising public investment efficiency, using DIG model simulations.
5. DIGNAD has helped the IMF country team assess that Solomon Islands will need about 6.9% of 2030 GDP in investment, in particular in resilient infrastructure and renewable energy, to meet the 2030 Sustainable Development Goals (SDGs).

[11] These are the written output of the IMF's regular monitoring of its members' economies and associated provision of policy advice. The Article IV reports are usually released annually for most countries.

6. In another application to Samoa, the DIGNAD model was used to estimate the damage to infrastructure and livelihoods of increasingly frequent and severe coastal storms.
7. In the same vein, an Article IV Staff Report on Rwanda found that building adaptation infrastructure can reduce up to two thirds of GDP losses and nearly half of the resulting fiscal gap caused by a natural disaster.
8. A Selected Issues paper analysed Kenya's profile of gender inequality and showed that greater gender equality would generate substantial macroeconomic and socioeconomic benefits. Amongst studied options, policies aimed at reducing the educational gender gap and discrimination in the informal sector have the largest positive effects.

Indicator 2.2: Applications by country authorities
MRLIC team continued to collaborate closely with the Bank of Ghana in its effort to build an effective macroeconomic framework for monetary policy. As part of this initiative, the IMF delivered three virtual Forecasting and Policy Analysis Systems (FPAS) Technical Assistance missions to Ghana.

Courses for IMF country teams and country authorities (sub-indicator 2.1.a and 2.2.a). MRLIC work continued to become operationalised through training courses provided through the IMF's Institute for Capacity Development (ICD). As such, tools developed by MRLIC gradually become increasingly used both by IMF analysts (sub-indicator 2.1.a) and by government officials (sub-indicator 2.2.a). Last year five courses were offered to IMF staff and five to country authorities:

- *Courses offered to both IMF staff and country authorities:*
    - Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)
    - Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)
- *Courses offered to IMF staff only:*
    - Course: Macro-Structural Training: Distributional Impact of Policies and Reforms
    - Course: Clinic on Diversification, Structural Transformation, and Reforms in Developing Economies
    - Course: Clinic on Labor and Product Market Reforms
- *Courses offered to country authorities only:*
    - Presentation to Authorities: Enhancing Resilience to Climate Change in the Maldives
    - Course: DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemic in Emerging and Developing Countries at IMF CCAMTAC
    - Course: Gender equality and macroeconomics (in collaboration with the African Training Institute (ATI) and UN Women) to African country authorities

The MRLIC work also makes contributions to IMF operations on LICs through internal country reviews. In 2021/22, MRLIC research team reviewed 10 IMF country reports on selected LICs where policy issues are intense. MRLIC comments focused on any issues regarding debt sustainability; macro projections; monetary policy and inflation issues; climate change; inequality and social protection aspects; and structural reforms. These comments were well-anchored by various MRLIC products, such as DIG-type models including climate change implications, COVID-19 notes, work on monetary policy frameworks, food inflation analysis, models on inequality and fiscal policy, and datasets on structural reforms and economic diversification. IMF country teams often adjust their macroeconomic projections and recommendations reflecting MRLIC comments.

Progress on recommendations from the previous AR (if completed), lessons learned this year and recommendations for the year ahead

Recommendation	Progress
The MRLIC programme stepped up its country engagement despite the challenge of the pandemic. Going forward, the programme should aim to better draw out what are the outcomes and impacts of its research and country uptake activities on policy decisions and outcomes.	There have been efforts in providing this e.g. conclusions of the DIG applications in various countries and the main recommendations from the analysis. The next step would be to think about how to assess whether this analysis or advice changes outcomes but current resource constraints may make it hard for the programme team to assess.

Output Title	Engagement by senior IMF policymakers on issues affecting LICs strengthened through this project.		
Output number:	3	Output Score:	**A+**
Impact weighting (%):	25%	Weighting revised since last AR?	No

Indicator(s)	Milestone(s) for this review	Progress
3.1 High level policy conferences attended by senior IMF staff reflect findings of research papers funded under this project.	By March 2022, number of policy conferences drawing on outputs from the project: H (48) M (46) L (44)	*50 cumulative (8 in 21/22) met high target*
3.2. Results of research papers produced reflected in IMF policy papers such as Staff Discussion Notes, policy memos to management etc. *Of which:* 3.2.a. Results of the research papers produced reflected in IMF Board discussions.	By March 2022: H (53) M (52) L (50) By March 2021: H (27) M (25) L (23)	*54 cumulative (5 in 21/22) met high target* *23 (1 in 2021/22) met low target*

Briefly describe the output's activities and provide supporting narrative for the score.

This output scores an A+. Indicator 3.1 and 3.2 both exceed meets high target while sub-indicator 3.2.a just meets the low target. IMF MRLIC research continued to be influential at the highest levels in shaping policy the IMF's response to LICs in the context of the pandemic and shaped the IMF's policy direction on key areas of fragility and food security. As improving the IMF's performance has been a major FCDO and HMT priority for engagement with the Fund, so the MRLIC is effectively contributing to overall HMG objectives. This high level engagement also helped MRLIC secure funding from the donor-funded COVID-19 Crisis Capacity Development Initiative (CCCDI) in 2020/21.

Indicator 3.1: High level conferences

MRLIC research was presented and discussed at eight high profile conferences in the past year, bringing the cumulative total to 50, exceeding the high target. This is much higher than the performance on this indicator last year and indicates the reach of MRLIC research within the Fund on key areas such as macroeconomic response to climate shocks, food security and fragility.

1. Climate-Related Natural Disasters—Macroeconomic Effects and Policy Responses
2. Supporting Food Security in Sub Saharan Africa Amid the COVID Pandemic and Climate Change
3. COVID-19 and Fragile States: Promoting Resilient Recovery for the Most Vulnerable Communities
4. Macroeconomic Fragile States post COVID-19: What Stabilization Policies?
5. How to Achieve Inclusive Growth
6. Presentation of "EAC: Challenges to Monetary Policy Space and Transmission" at a seminar during the 2021 Annual Meetings, "Meeting with EAC Ministers of Finance and Central Bank Governors"
7. IMF-FSB joint Early Warning Exercise: Potential Loss from Human Capital Scarring Due to the Pandemic
8. Supporting Fragile and Conflict-Affected States: The IMF FCS Strategy

MRLIC's work on fragility has been particularly impactful. Earlier MRLIC research on fragility, notably the book on Macroeconomic Policy in Fragile States (Oxford University Press, 2021) and an IMF training course on macroeconomics of fragile states[12] delivered in 2020/21, helped inform and shape the IMF's engagement with Fragile states. In 2021/22, MRLIC research on this theme continued to feature in several high-profile events. This culminated in the publication of a new IMF Fragile and Conflict Affected States Strategy which discussed at the IMF Board Meeting in March 2022 and subsequently launched. While out of scope of the current Annual Review period, it is worth noting that the IMF and FCDO also jointly organised a conference in June 2022 to explore the nexus between

[12] The Macroeconomics of Fragile States training course was delivered from September 2020 – January 2021. The programme targeted IMF desk economists and mission chiefs working on FCAS, with a focus on tools, policy design, and implementation challenges.

fragility, conflict, and macroeconomic policy – with participation from FCDO's Director General for Development in Humanitarian Nick Dyer.

Indicator 3.2. Research reflected in IMF Board discussion and other IMF policy papers.
MRLIC research was reflected in total in five high profile policy papers, exceeding the cumulative high target. As noted above, this includes MRLIC contribution to a section in the IMF Board Paper on fragility: The IMF's Strategy in Fragile and Conflict-Affected States (FCS), meeting the low cumulative target for sub-indicator 3.2.a. on Board Papers. The Board Presentation on Targeted Interventions was planned to be a Board paper but due to unforeseen circumstances out of the programme's control was only discussed as a Presentation[13].

MRLIC research was also reflected in four other IMF high profile publications and a Board presentation (more details in the Annex):

1. October 2021 WEO Box 2.1: Food Insecurity and Prices during COVID-19
2. Staff Climate Note on Macro-Fiscal Implications of Adaptation to Climate Change (joint with FAD)
3. Board Presentation: The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work
4. October 2021 MCD REO: A fragile recovery continues in the Middle East and Central Asia region.

In addition to the formal papers and presentations listed above, MRLIC also produces briefing materials and speaking notes for IMF senior staff, based on the insights obtained from MRLIC research. It is hard to measure and track the number of these outputs, but this is another channel through which the MRLIC has an influence on policy discussions at the senior level.

Progress on recommendations from the previous AR (if completed), lessons learned this year and recommendations for the year ahead

The MRLIC research continues to receive technical from seniors at the IMF, although as noted below, despite successfully obtaining funding from COVID-19 Crisis Capacity Development Initiative (CCCDI) in 2021/22 (which made up for the shortfall in funding from FCDO), bids for more CCCDI funding in 22/23 have so far been unsuccessful. So far it is not clear that IMF core resources are pivoting towards LIC macro development research. At the same time, there is clearly evidence of wider themes promoted by this programme – Gender and Fragility – contributing to high-level strategies.

Progress on recommendations from previous AR:

Recommendation	Progress
Leverage the programme's strong brand to raise funding for MRLIC from within the IMF and work on developing an indicator to track the level of IMF resources committed to LIC issues.	In the 2021/22 MRLIC was able to obtain complementary funding from the IMF's COVID-19 Crisis Capacity Development Initiative (CCCDI)[14]. However this was only available for one year and efforts to get a longer term financing haven't yet been successful.
There should be more efforts to clarify the outcome and impact of this work i.e., how these activities are leading to changes in the IMF's vision, policymaking, or understanding of macroeconomic challenges facing LICs.	In progress. The MRLIC team have aimed to clarify specific contributions of their research to the IMF's overall policy direction, for example on the macro-criticality of food security.

[13] Formal IMF Board Papers involve a decision. They are therefore key in setting top-down IMF policy direction. Board presentations do not involve an explicit decision however it does mean MRLIC research is being publicised and discussed by IMF senior management and the Executive Directors.
[14] CCCDI is a capacity development project to help fulfill the urgent need to support policymaking in low-income countries and low-end emerging market economies, focusing on climate change and inequality under the COVID-19 pandemicThe CCCDI is supported by the following partners: Belgium, Canada, China, Germany, Japan, Korea, Spain, Singapore, and Switzerland. The CCCDI funding for the fiscal year 2022 amounts to USD 1.2 million.

Output Title	IMF strengthens research capacity, by expanding the network of researchers and policy makers working on LIC macroeconomics		
Output number:	4	Output Score:	A
Impact weighting (%):	15%	Weighting revised since last AR?	No

Indicator(s)	Milestone(s) for this review	Progress
4.1 Number of commissioned research papers from researchers produced on thematic areas[15].	By March 2022, number of commissioned research papers produced: H (35) M (33) L (32)	*34 (this year, 2 chapters in inclusive growth)* *Met medium*
4.2. A data toolkit is a new dataset that is put in a format that is accessible and applicable to the work of IMF country teams and country authorities.	By March 2022, number of produced: H (14) M (13) L (11)	*13 cumulative, 2 in the past year (met medium)*
4.3 Attendance of external researchers and policy makers at high-level policy conferences.	By March 2022, number of high-level policy conferences attended by external researchers: H (152) M (148) L (144)	*155 cumulative, 16 this year, exceeds high*

Briefly describe the output's activities, and provide supporting narrative for the score.

This output scores an A. Two indicators have met the medium target, one has exceeded the high target. In the context of the reduction in the budget as well as major macroeconomic shocks, leading to low resources, the current strategy of hiring researchers and commissioning papers from external researchers is pragmatic. The creation of toolkits and their subsequent mainstreaming into IMF's operations is a key channel through which MRLIC manages to generate influence at the scale of the IMF. Beyond the IMF, MRLIC research continues to be disseminated to a wider network of policymakers and academics at conferences or in other publications.

Indicator 4.1: Commissioned papers from external researchers
MRLIC research is either produced internally by IMF and contractual research staff or commissioned from external researchers, which is one way through which the programme aims to expand the network of researchers working on macro development and increase the visibility of the field. This year, two pieces were commissioned externally – the two book chapters of the Book on Inclusive Growth. As noted under Output 1, MRLIC also facilitated the visit of external academics working on the volume.

1. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]
2. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]

Indicator 4.2: Data and toolkits
The toolkits developed in previous years continue to be extensively used across IMF activities and are becoming increasingly institutionalised. This year, MRLIC produced two new toolkits:

- Debt-Investment-Growth-Natural-Disasters (DIGNAD) model quantitatively assesses the macroeconomic effects of natural disasters and associated policy trade-offs in small natural disaster-prone states. It was integrated to part of the IMF's newly branded technical assistance programme on climate change, Climate Macroeconomic Assessment Program (CMAP). In the first pilot case of Samoa, DIGNAD simulations informed the policy advice to advocate additional climate-adaptation investment. Applications of DIGNAD model to Bangladesh, Timor-Leste, and Madagascar are forthcoming.
- The Independence and Accountability, Policy and Operational Strategy, and Communications (IAPOC) index, is a new assessment toolkit for monetary policy frameworks. The index synthesizes various pillars capturing the soundness of monetary policy frameworks (MPFs) for 50 economies over time, including LICs, providing specific levers to policymakers for improving MPFs. The IAPOC

[15] These papers are also included under Output Indicators 1.1 for total working papers, and, if appropriate, indicator 1.2. (publications).

toolkit has been presented at conferences and used to strengthen MPF consultations for Georgia, Kyrgyz Republic, Kenya, Rwanda, Tanzania, and Uganda.

Indicator 4.2: Attendance at conferences
This year MRLIC research was presented at 16 high-level policy and academic conferences, leading to a cumulative total of 155, exceeding the high target. This includes prestigious academic conferences for instance at the National Bureau of Economics (NBER) conference and the Annual Meeting of the American Economic Association (ASSA), presentations at the World Bank or IMF.

Finally, MRLIC research updates and events continued to be disseminated in blogs, articles and in the quarterly newsletter, which is distributed to a broad network of over 1,500 academics, policymakers, central bank staff, and government representatives including FCDO staff. A forward look of upcoming outputs, events and presentations is provided to FCDO quarterly. This allows for targeted dissemination to relevant policy teams and to the UK delegation at the IMF. Examples of MRLIC research in blogs and articles:

- IMF Blog: Fragile and Conflict-Affected Economies Are Falling Further Behind
- VOXEU Blog: Defying the odds: Remittances held up during the COVID-19 pandemic
- VOXEU: Blog Investigating the Drivers of Remittance Fees
- GlobalDev Blog: Public investment for growth: a country's absorptive capacity is key
- IMF Podcast: Island States Paying Price for Climate Change
- F&D: Intergenerational Social Mobility in Africa
- DIGNAR-19 Toolkit Manual
- Note: "Spillovers from the War in Ukraine to Low-income Countries" (bilaterally shared with FCDO)

Progress on recommendations from the previous AR (if completed), lessons learned this year and recommendations for the year ahead

MRLIC research is actively disseminated, in academic and policy conferences or other blogs/articles, and clearly contributing to wider debate and engagement on these issues. The production of toolkits is a strength of the programme and a critical mechanism through which MRLIC research becomes used by the network of IMF economists and through which these toolkits become embedded in the IMF's operations.

In the previous review, recommendations were around strengthening MRLIC's efforts to expand the network of researchers working on macroeconomic issues relevant for LICs. Following discussions with FCDO and in the context of budget cuts and emerging crises such as Covid-19 and the Russia-Ukraine conflict, FCDO and IMF agreed that the current approach of commissioning is satisfactory and that events and conferences are another to strengthen the network of researchers involved in macro development.

It is worth noting that MRLIC expands the researcher base on macro development, not only by co-authoring or commissioning papers with external researchers but also by involving junior researchers at an early stage of their careers. Many of such junior researchers further pursue research on macro development issues even after their direct involvements with the MRLIC, and MRLIC research officers also afterwards pursue PhD studies at research universities.

D: RISK

Overview of risk management

The overall risk rating for this project remains Minor. The Covid-19 pandemic and Russia-Ukraine crisis have affected the way in which the programme operates but is only a minor risk – the MRLIC has shown that demand for research products and expertise on LICs is high. However, the reduction in FCDO funding, and difficulties in finding other long-term sources of funding could reduce the effectiveness of the programme. Mitigations include trying to focus the programme on its core elements and continuing efforts to securing additional funding.

- External context: Most research is carried out at IMF headquarters using secondary datasets, so has limited exposure to context in LICs.
- Delivery: Established delivery systems are in place and have demonstrated high delivery over an extended period. Demand for MRLIC outputs remains high.
- Operational: Experienced management teams are in place at both FCDO and IMF.
- Fiduciary: All funds are spent directly by the IMF and are subject to extensive IMF financial management controls.
- Reputational: Research activities and topics pose little or no reputational risk.
- Innovation: Research activities and topics are not subject to substantial innovation risks.
- Safeguarding: Programme activities rarely, if ever, involve contact with vulnerable persons, and external researchers are managed in accordance with IMF procedures.

A Central Assurance Assessment (CAA) of the IMF as a whole was conducted by FCDO in March 2019 which confirmed the IMF’s position as a low-risk partner. This CAA also covered enhanced areas of due diligence including safeguarding procedures. A light touch due diligence was conducted in November 2019 ahead of commencement of Phase 4. This was largely drawn from the CAA, and it was only necessary to assess any programme-specific differences to the IMF’s standard operating procedures. There is little that is different about how the MRLIC programme operates than how the IMF operates as a whole. Hence the CAA findings also hold true for the MRLIC programme.

The overall risk remains minor, as all residual risks are now reduced to minor with the maturity of the programme. The risk register has been updated as part of the response to Covid-19 but needs to be further updates to reflect the evolution of operations during the pandemic and the additional risk caused by the reduction in funding available from the FCDO, leading to a small budget for travel and uptake.

Partnership principles are not applicable. MRLIC is a research programme managed by the IMF. No funding is passed to country governments or similar bodies. All funds are held and managed by the IMF and are subject to strict financial controls under IMF policies and in accordance with the rules applied to donor sub-accounts, in this case the United Kingdom Selected Fund Activities (SFA) sub-account. These rules are set at Board level and are not subject to negotiation by the team.

E: PROGRAMME MANAGEMENT: DELIVERY, COMMERCIAL & FINANCIAL PERFORMANCE

Summarise the performance of partners and DFID, notably on commercial and financial issues, and including consideration of VfM measures of economy and efficiency.

During the reporting period, FCDO extended the existing funding agreement by two years to enable the annual funding to be re-profiled. This was due to the reduction in the ODA spending target by the UK Government. As a result, annual funding from FCDO was reduced from £1.7m to £0.8m. The reduction in funding potentially reduces the effectiveness of MRLIC. Lower funding means it is harder to cover the fixed costs of running a research programme (mainly staff) as well as additional costs e.g. for conferences or research uptake, that help maximise the impact of the research. The uncertainty itself poses challenges, as research production is a long-term process that requires stability, and uncertainty makes it harder to attract and retain contractual research staff. In 2021/22, the shortfall in funding was partly mitigated through temporary funding from CCCDI however it is not clear that complementary funding will be available for future years.

FCDO and IMF work closely together to monitor delivery of the programme and work through challenges that have arisen from the restructuring of the budget. There are quarterly check-in meetings to discuss progress and the IMF provides quarterly summaries of outputs produced and upcoming outputs and presentations. The programme has benefited from strong continuity in its management on the IMF side, enabling lessons to be learned over time. The MRLIC programme director has been involved with the project since its inception. He remains the main point of contact between the IMF and FCDO. Many of the IMF economists involved in the programme have also been involved for several years, providing continuity in the research workstreams.

VfM metrics for MRLIC are based on *efficiency* indicators i.e. unit costs of working papers and unit cost of publications (Table 1), with attention also given to the academic quality of the research. The cost per working paper is also approximately $70,000. The average cost per published paper is approximately $124,000. This is lower than the FCDO benchmark of $215,000 (£156,000) per paper. The quality of research outputs is also high, as noted under Output 1.

Table 1: Cost per Working and Published Paper

Total Staff/Contractual/Visiting Scholar Costs Costs	$16,409,566
Research Paper Costs	$12,307,175
Country Applications Costs	$4,102,392
Working Papers[2]	175
Cost Per Working Paper	$70,327
Published Papers[2]	99
Cost per Published Paper	$124,315

MRLIC also benefits from solid governance on the procurement process. It follows IMF guidelines for hiring, travel, and conferences. Contractual employees undergo a competitive process before being hired. Outputs must meet Fund requirements for publication. The quality of papers is further evaluated when they are submitted to peer-reviewed publications. Most of the funds available to this project have been spent on producing research by IMF staff and external researchers. Throughout this programme the IMF has been accurate and reliable in its cost estimates.

This Annual Review process was conducted by the FCDO programme team, Economic Advisor (PRO) and Deputy Programme Manager. Oversight was provided by the Senior Economist and Team Leader of the Growth Research Team.

Date of last narrative financial report	May 2021	Date of last audited annual statement	October 2019

Annex 1: summaries of working papers & publications under Output 1

Output 1.1 – Working Papers

Topic 1. Modelling and understanding policy choices

1. Departmental Paper: Taking Stock of IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems. Nils Mæhle, Tibor Hlédik, Mikhail Pranovich, and Carina Selander. Summary: This paper takes stock of forecasting and policy analysis system capacity development (FPAS CD), drawing extensively on the experience and lessons learned from developing FPAS capacity in the central banks. By sharing the insights gained during FPAS CD delivery and outlining the typical tools developed in the process, the paper aims to facilitate the understanding of FPAS CD within the IMF and to inform future CD on building macroeconomic frameworks. As such, the paper offers a qualitative assessment of the experience with FPAS CD delivery and the use of FPAS in the decision-making process in central banks.

2. The Distributional Implications of the Impact of Fuel Price Increases on Inflation. Kangni Kpodar and Boya Liu. Summary: This paper investigates the response of consumer price inflation to changes in domestic fuel prices, looking at the different categories of the overall consumer price index (CPI). We then combine household survey data with the CPI components to construct a CPI index for the poorest and richest income quintiles with the view to assess the distributional impact of the pass-through. To undertake this analysis, the paper provides an update to the Global Monthly Retail Fuel Price Database, expanding the product coverage to premium and regular fuels, the time dimension to December 2020, and the sample to 190 countries. Three key findings stand out. First, the response of inflation to gasoline price shocks is smaller, but more persistent and broad-based in developing economies than in advanced economies. Second, we show that past studies using crude oil prices instead of retail fuel prices to estimate the pass-through to inflation significantly underestimate it. Third, while the purchasing power of all households declines as fuel prices increase, the distributional impact is progressive. But the progressivity phases out within 6 months after the shock in advanced economies, whereas it persists beyond a year in developing countries.

Topic 2. Understanding macro-financial linkages

3. Defying the Odds: Remittances During the COVID-19 Pandemic. Kangni R Kpodar, Montfort Mlachila, Saad N Quayyum and Vigninou Gammadigbe. Summary: This paper provides an early assessment of the dynamics and drivers of remittances during the COVID-19 pandemic, using a newly compiled monthly remittance dataset for a sample of 52 countries, of which 16 countries with bilateral remittance data. The paper documents a strong resilience in remittance flows, notwithstanding an unprecedent global recession triggered by the pandemic. Using the local projection approach to estimate the impulse response functions of remittance flows during Jan 2020-Dec 2020, the paper provides evidence that: (i) remittances responded positively to COVID-19 infection rates in migrant home countries, underscoring its role as an important automatic stabilizer; (ii) stricter containment measures have the unintended consequence of dampening remittances; and (iii) a shift from informal to formal remittance channels due to travel restrictions appears to have also played a role in the surge in formal remittances. Lastly, the size of the fiscal stimulus in host countries is positively associated with remittances as the fiscal response cushions the economic impact of the pandemic.

4. The S-curve: Understanding the Dynamics of Worldwide Financial Liberalization Nan Li, Chris Papageorgiou, Tong Xu and Tao Zha. Summary: Using a novel database of domestic financial reforms in 90 countries over 1973-2014, we document that global financial liberalization followed an S-curve path: reforms were slow and gradual in early periods, accelerated during the 1990s, and slowed down after 2000. We estimate a learning model that explains these dynamics. Policymakers updated their beliefs about the growth effects of financial reforms by learning from their own and other countries' experiences. Positive growth surprises in advanced economies helped accelerate belief updating worldwide, leading to the global wave of financial liberalization in the 1990s. The 2008 financial crisis, however, caused significant belief reversals.

5. The World Uncertainty Index. Hites Ahir, Nicholas Bloom and Davide Furceri. Summary: We construct the World Uncertainty Index (WUI) for an unbalanced panel of 143 individual countries on a quarterly basis from 1952. This is the frequency of the word "uncertainty" in the quarterly Economist Intelligence Unit country reports. Globally, the Index spikes around major events like the Gulf War, the Euro debt crisis, the Brexit vote and the COVID pandemic. The level of uncertainty is higher in developing countries but is more synchronized across advanced economies with their tighter trade and financial linkages. In a panel vector autoregressive setting we find that innovations in the WUI foreshadow significant declines in output. This effect is larger and more persistent in countries with lower institutional quality, and in sectors with greater financial constraints.

Topic 3. Building resilience

6. Global Climate Change Mitigation, Fossil-Fuel Driven Development, and the Role of Financial and Technology Transfers: A Simple Framework. Johannes Wiegand
Summary: Climate financing and compensation have emerged as key themes in the international climate mitigation debate. According to one argument in support of compensation, advanced economies (AEs) have used up much of the atmosphere's absorptive capacity, thus causing global warming and blocking a similar, fossil-fuel driven development path for emerging markets and developing economies (EMDEs). This paper develops a simple model of a sequential, fossil-fuel driven development process to discuss these issues systematically. The results suggest: (i) AEs have typically a stronger interest in climate change mitigation than EMDEs, (ii) from an equity perspective, compensation is called for only if EMDEs are relatively small; (iii) there can also be an efficiency case for compensation, however, with AEs buying EMDEs out of some of their GHG emissions; (iv) ultimately, a superior option—for both the world's climate and growth prospects—is the development of clean energy technologies by AEs and their transfer to EMDEs. The latter requires strong mitigation efforts by AEs even if EMDEs fail to play along initially.

7. How do Climate Shocks Affect the Impact of FDI, ODA and Remittances on Economic Growth? Alassane Drabo. Summary: The three main financial inflows to developing countries have largely increased during the last two decades, despite the large debate in the literature regarding their effects on economic growth which is not yet clear-cut. An emerging literature investigates the dependence of their effects on some country characteristics such as human and physical capital constraint, macroeconomic policy and institutional capacity. This paper extends the literature by arguing that climate shocks may undermine the effect of Foreign Direct Investment (FDI), official development assistance (ODA) and migrants' remittances on economic expansion. Based on neoclassical growth framework, the theoretical model indicates that FDI, ODA, and remittances improve economic growth, and the size of the effect increases with good absorptive capacity. However, climate shocks reduce this positive effect of financial flows in developing countries. Using a sample of low and middle-income countries from 1995 to 2018, the empirical investigation confirms the theoretical conclusions. Developing countries should build strong resilience to climate change. Actions are also needed at global level to reduce greenhouse gases emissions, and build strong structural resilience to climate shocks especially in developing countries.

Topic 4. Promoting structural change and institutional development

8. Macro-Fiscal Gains from Anticorruption Reforms in the Republic of Congo [Chapter 6 of Good Governance in Sub-Saharan Africa]. Giovanni Melina, Hoda Selim, and Concepcion Verdugo-Yepes
Summary: Notwithstanding the anticorruption efforts the authorities have made since 2017, this chapter argues that oil revenue management and public investment in Congo remain vulnerable to corruption as a result of insufficient transparency and accountability. Corruption in these sectors is potentially a significant factor of weak macro-fiscal outcomes. Nevertheless, macro-fiscal gains from anticorruption reforms are significant. Depending on how ambitious reforms are, the potential additional growth can range between 0.8 and 1.8 percentage points per year in the long term over the next 10 years. Furthermore, debt can decline by 2.25 to 3 percentage points of GDP per year over the same period. Oil sector governance reforms could target improving transparency in oil trading and strengthening oversight and accountability of Congo's national oil company. These reforms would be supported by measures to enhance the framework for anti–money laundering. Measures to reform public investment management and efficiency would include increasing transparency of public investment execution, strengthening external controls, and restructuring the internal audit system.

Topic 5. Enhancing inclusion

9. Intergenerational Social Mobility in Africa Since 1920. Rasmane Ouedraogo and Nicolas Syrichas
Summary: The COVID-19 crisis has a severe impact on education and employment and exposed the many social inequities that make some populations more vulnerable to shocks. Despite a vast literature on social mobility in advanced economies, little is known about it in African countries, mainly due to data limitations. Using a large, harmonized dataset of more than 72 million individuals, we fill this gap and examine socioeconomic status mobility across generations, measured by educational and occupational attainment. We uncover the substantial geographical variations in the degree of upward/downward educational and occupational mobility across and within African countries, and the gender and rural/urban divide. Additionally, we explore the determinants of social mobility in the African region. We find that social mobility on the continent could be partly explained by observable individual characteristics (gender, marital status, age, etc.), and that educational mobility is a driver of occupational mobility. Lastly, we show that the quality of institutions, the level of public spending on education, social protection coverage, natural resource endowments, and countries' fragility are strong predictors of social mobility in Africa. This paper has recently been presented in an Analytical Corner session during the IMF-World Bank April 2022 Spring Meetings. The

results were also published as a blog on F&D magazine.

10. The Close Relationship between Informality and Gender Gaps in Sub-Saharan Africa [Chapter 7 of The Global Informal Workforce: Priorities for Inclusive Growth] Vivian Malta, Lisa Kolovich, Angelica Martínez Leyva, and Marina M. Tavares. Summary: This chapter investigates the factors that can explain the larger presence of women in the informal sector. The authors show the association between female overrepresentation in the informal sector and gender gaps in education, social and legal norms biased against women, and the legal framework. In particular, they find that low education is usually more relevant for women as a driver of informal employment.

11. Epidemics, Gender, and Human Capital in Developing Countries. Stefania Fabrizio, Diego B. P. Gomes, Carine Meyimdjui, and Marina M. Tavares. Summary: Epidemics have disrupted lives for centuries with deleterious human capital and economic repercussions. This paper investigates how epidemics episodes have impacted school dropouts in developing countries, considering 623 epidemics episodes across countries from 1970 to 2019. The results show that, on average, epidemics reduce completion rates by about 2.6 and 2.1 percentage points in primary and lower secondary education respectively, with girls more severely affected than boys. Using detailed micro data for Senegal, the paper also estimates the potential loss of lifelong earnings and finds that the potential labor earnings loss from dropping out of primary and secondary school is almost double for girls than for boys. The results of this paper have been presented as an Analytical Corner session during the IMF-World Bank October 2021 Annual Meetings.

12. Loss-of-Learning and the Post-Covid Recovery in Low-Income Countries. Edward F Buffie, Christopher S Adam, Luis-Felipe Zanna and Kangni R Kpodar. Summary: We analyze the medium-term macroeconomic impact of the Covid-19 pandemic and associated lock-down measures on low-income countries. We focus on the impact over the medium run of the degradation of health and human capital caused by the pandemic and its aftermath, exploring the trade-offs between rebuilding human capital and the recovery of livelihoods and macroeconomic sustainability. A dynamic general equilibrium model is calibrated to reflect the structural characteristics of vulnerable low-income countries and to replicate key dimensions of the Covid-19 shock. We show that absent significant and sustained external financing, the persistence of loss-of-learning effects on labor productivity is likely to make the post-Covid recovery more attenuated and more expensive than many contemporary analyses suggest.

13. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]. Asmaa El-Ganainy, Ekkehard Ernst, Rossana Merola, Richard Rogerson, and Martin Schindler [Commissioned]
Summary: Labor earnings are the dominant income source for most individuals. Thus, an inclusive labor market is key for ensuring inclusive growth. In this chapter we propose four principles that an inclusive labor market will embody: access, fairness, protection and voice. While measuring inclusivity presents challenges, we discuss how data can be used to shed light on the extent of inclusivity and document cross-country trends and stylized facts. We also discuss the role of policy in achieving an inclusive labor market, focusing on the need to rebalance growth; improve risk sharing; and fight discrimination. Several messages emerge. First, some policies entail a trade-off between the different dimensions of inclusivity. Second, it is important to view policies as a bundle, taking into account substitution and complementarities. Third, some policies are win-win, in the sense that they both increase inclusivity and improve overall efficiency.

14. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]. Barry Eichengreen, Balazs Csonto, and Asmaa El-Ganainy [Commissioned]. Summary: This chapter reviews the academic and policy debate on the association between financial globalization and inequality. The evidence suggests that the distributional impact of financial globalization is context-specific and different types of flows have different distributional implications, though the consensus points to unequalizing effects of capital account liberalization. The overall impact thus depends on the composition of flows, their interaction, as well as on the broader economic and institutional conditions. A comprehensive set of policies, including macroeconomic and financial sector policies, and labor and product markets, is important to enable wider sharing of the benefits of financial globalization.

Output 1.2 – Published Papers

Topic 1. Modelling and understanding policy choices

9. **Building back better: How big are green spending multipliers? Nicoletta Batini, Mario Di Serio, Matteo Fragetta, Giovanni Melina and Anthony Waldron. Ecological Economics**.
Summary: Is there a trade-off between spending on the green economy and an economy's strength? This paper addresses this question by estimating output multipliers for spending in clean energy and biodiversity conservation, and by comparing these to multipliers of spending on non-ecofriendly energy and land use activities. Using a new international dataset, we arrive at two key results. First, we find that every dollar

spent on key carbon-neutral or carbon-sink activities can generate more than a dollar's worth of economic activity, whereas non-green spending returns less than a dollar. Second, for categories of spending where formal comparisons are possible, like renewable versus fossil fuel energy, we find that multipliers on green spending are about twice as large as their non-green counterparts. The point estimates of the multipliers are 1.1–1.7 for renewable energy investment and 0.4–0.7 for fossil fuel energy investment, depending on horizon and specification. These findings survive several robustness checks and lend support to bottom-up analyses that find that stabilizing climate and reversing biodiversity loss go hand in hand with economic prosperity. The countries in the sample for green land-use investment are from Africa or other lower-income countries.

10. **The distributional implications of the impact of fuel price increases on inflation. Kangni Kpodar and Boya Liu. Energy Economics**.
Summary: This paper investigates the response of consumer price inflation to changes in domestic fuel prices, looking at the different categories of the overall consumer price index (CPI). We then combine household survey data with the CPI components to construct a CPI index for the poorest and richest income quintiles with the view to assess the distributional impact of the pass-through. To undertake this analysis, the paper provides an update to the Global Monthly Retail Fuel Price Database, expanding the product coverage to premium and regular fuels, the time dimension to December 2020, and the sample to 190 countries. Three key findings stand out. First, the response of inflation to gasoline price shocks is smaller, but more persistent and broad-based in developing economies than in advanced economies. Second, we show that past studies using crude oil prices instead of retail fuel prices to estimate the pass-through to inflation significantly underestimate it. Third, while the purchasing power of all households declines as fuel prices increase, the distributional impact is progressive. But the progressivity phases out within 6 months after the shock in advanced economies, whereas it persists beyond a year in developing countries.

Topic 2. Understanding macro-financial linkages

11. **The welfare implications of exchange rate choices in developing agricultural economies**
Tara Iyer. Journal of Macroeconomics
Summary: This paper analyzes the appropriate choice of an exchange rate regime in agricultural commodity-exporting economies. In an estimated open economy model that incorporates key structural characteristics of agricultural commodity exporters including dual labor markets and imperfect asset markets, the benefits of exchange rate flexibility are shown to depend on the extent of labor and product market development. With developed markets, flexible exchange rates are preferred as they allow for greater relative price fluctuations, which amplify the transmission mechanism of labor re-allocation upon commodity price volatility. When labor and product markets are not well-developed, however, international relative price adjustments exacerbate currency and factor misalignments. A nominal exchange rate peg, by mitigating relative wage and price fluctuations, increases welfare relative to a float. Given the current low level of labor and product market development across most agricultural commodity exporters, the study provides a novel rationale as to why exchange rate targeting is implemented in many developing agricultural economies.

Topic 3. Building resilience

12. **Trends and cycles in CO2 emissions and incomes: Cross-country evidence on decoupling**
Gail Cohen, Joao Tovar Jalles, Prakash Loungani and Pietro Pizzuto. Journal of Macroeconomics
Summary: This paper provides cross-country evidence on the relationship between growth in CO2 emissions and real GDP growth from 1960 to 2018. The focus is on distinguishing longer-run trends in this relationship from short-run cyclical fluctuations, and on documenting changes in these relationships over time. Using two filtering techniques for separating trend and cycle, we find that long-run trends show evidence of decoupling in richer nations—particularly in European countries—but not yet in developing economies, and that there is stronger evidence of decoupling over the 1990 to 2018 sub-period than over the earlier 1960 to 1989 sub-period. There is also a strong cyclical relationship between emissions and real GDP growth in both advanced and developing economies, and the strength of this relationship has not weakened much over time. The cyclical relationship is largely symmetric: emissions fall about as much during recessions as they rise during booms. The transition to a low-carbon economy will thus require continued progress not only in bringing down trend emissions, particularly in developing economies, but also in taming the increase in emissions that occurs during the boom phase of the business cycle.

Topic 4. Promoting structural change and institutional development

13. **Will the AI revolution cause a great divergence? Cristian Alonso, Andrew Berg, Siddharth Kothari, Chris Papageorgiou and Sidra Rehman. Journal of Monetary Economics**
Summary: Implications of a new wave of technological change that substitutes pervasively for labor are

examined with particular focus on developing countries. While the model considered is minimalist by design, the resulting conclusions are powerful: improvements in the productivity of "robots" drive divergence, as advanced countries differentially benefit from their initially higher robot intensity, driven by their endogenously higher wages and stock of complementary traditional capital. Capital—if internationally mobile—is pulled "uphill", resulting in a transitional GDP decline in the developing country. When robots substitute only for unskilled labor, the terms of trade, and hence GDP, may decline permanently.

14. Growth-equity trade-offs in structural reforms **Jonathan D. Ostry, Andrew Berg and Siddharth Kothari Scottish Journal of Political Economy.** Summary: Do structural reforms that aim to boost potential output also change the distribution of income? We shed light on this question by looking at the broad patterns in the cross-country data covering advanced, emerging-market, and low-income countries. Our main finding is that there is indeed evidence of a growth-equity trade-off for some important reforms. Financial and capital account liberalization seem to increase both growth and inequality, as do some measures of liberalization of current account transactions. Reforms aimed at strengthening the impartiality of and adherence to the legal system seem to entail no growth-equity trade-off—such reforms are good for growth and do not worsen inequality. The results for our index of network reforms as well as our measure of the decentralization of collective labor bargaining are the weakest and least robust, potentially due to data limitations. We also ask: If some structural reforms worsen inequality, to what degree does this offset the growth gains from the reforms themselves? While higher inequality does dampen the growth benefits, the net effect on growth remains positive for most reform indicators.

15. The role of productivity, transportation costs, and barriers to intersectoral mobility in structural transformation **Cem Karayalcin and Mihaela Pintea. Economic Modelling.** Summary: The process of economic development is characterized by substantial resource reallocations across sectors. In this paper, we construct a baseline multi-sector model with barriers to the movement of labor from low-productivity traditional agriculture to modern sectors. With such barriers in place, we show that improved productivity in modern sectors (including agriculture) or reduced transportation costs may lead to rising agricultural employment and, through terms of trade effects, may harm traditional farmers if this sector is larger than a critical level. This suggests that policy advice based on the earlier literature needs revision. Reducing mobility barriers (through reduced costs for skills acquisition and institutional changes) and improving the productivity of traditional farmers must precede policies designed to increase the productivity of modern sectors or reduce transportation costs.

Topic 5. Enhancing inclusion

16. The Distributional Effects of Government Spending Shocks in Developing Economies **Davide Furceri, Jun Ge, Prakash Loungani and Giovanni Melina. Review of Development Economics.** Summary: We construct unanticipated government spending shocks for 103 developing countries from 1990 to 2015 and study their effects on income distribution. We find that unanticipated fiscal consolidations lead to a long-lasting increase in income inequality, while fiscal expansions lower inequality. The results are robust to several measures of income distribution and size of the fiscal shocks, to an alternative identification strategy, across expansions and recessions and across country groups (low-income countries vs. emerging markets). An additional contribution of the paper is the computation of the medium-term inequality multiplier. This is on average about 1 in our sample, meaning that a cumulative decrease in government spending of 1% of gross domestic product over 5 years is associated with a cumulative increase in the Gini coefficient over the same period of about 1 percentage point. The multiplier is larger for total government expenditure than for public investment and consumption (with the former having larger effect), likely due to the redistributive role of transfers. Finally, we find that (unanticipated) fiscal consolidations lead to an increase in poverty.

17. Serving the Underserved: Microcredit As a Pathway to Commercial Banks**. Sumit Agarwal, Thomas Kigabo, Camelia Minoiu, Andrea F. Presbitero and André F. Silva. The Review of Economics and Statistics**. Summary: A large-scale microcredit expansion program—together with a credit bureau accessible to all lenders—can enable unbanked borrowers to build a credit history, facilitating their transition to commercial banks. Loan-level data from Rwanda show the program improved access to credit and reduced poverty. A sizable share of first-time borrowers switched to commercial banks, which cream-skim less risky borrowers and grant them larger, cheaper, and longer-maturity loans. Switchers have lower default risk than non-switchers and are not riskier than other bank borrowers. Switchers also obtain better loan terms from banks compared with first-time bank borrowers without a credit history.

Published papers produced before Phase 4 (for the record) which were not added in previous Annual Review:

1. Financial intermediation costs in low income countries: The role of regulatory, institutional, and macroeconomic factors [published in March 2013]. Tigran Poghosyan. Economic Systems

2. Investment scaling up and the role of government [published in February 2016]. Matteo F. Ghilardi and Sergio Sola. Applied Economics
3. The Finance and Growth Nexus Re-Examined: Do All Countries Benefit Equally? [published in February 2016] Adolfo Barajas, Ralph Chami, and Seyed Reza Yousefi. Journal of Banking and Financial Economics
4. Implications of food subsistence for monetary policy and inflation [published in July 2016]. Rafael Portillo, Luis-Felipe Zanna, Stephen A. O'Connell, and Richard Peck. Oxford Economic Papers
5. Harnessing Resource Wealth for Inclusive Growth in Fragile Western African States [published in March 2017]. Corinne Deléchat, Shu-Chun S. Yang, Will Clark, Pranav Gupta, Malangu Kabedi-Mbuyi, Mesmin Koulet-Vickot, Carla Macario, Toomas Orav, Manuel Rosales, René Tapsoba, Dmitry Zhdankin. Journal of African Economies
6. Government spending effects in low-income countries [published in July 2018] Wenyi Shen, Shu-Chun S. Yang, and Luis-Felipe Zanna. Journal of Development Economics
7. The Monetary Transmission Mechanism in the Tropics: A Case Study Approach [published in June 2019] Andrew Berg, Luisa Charry, Rafael Portillo, and Jan Vlcek. Journal of African Economies

Annex B: Details of Country Applications under Output 2

Output 2.1. Applications by IMF country staff

1. Box 2: Estimating Reform Gains (application of DIGNAR-19 model to Uganda, Article IV)

Summary: Simulations conducted with the IMF's DIGNAR-19 dynamic general equilibrium model, calibrated to Ugandan data, are leveraged to quantify growth dividends form a reform package. The combined effect of the reform package would yield a medium-term increase in non-oil real GDP growth of 1.8 percentage points. The combined effects of fiscal measures, structural and governance reforms would lift non-oil growth potential to almost 6.5 percent in the medium term, allowing the Ugandan economy to offset the effects of COVID-19 scarring. Under the reform scenario, Uganda would reach a middle-income status by FY2026/27.

2. Application of DIGNAR-19 model to Guinea (Article IV)

Summary: Growth in Guinea is becoming increasingly concentrated in the mining sector. With almost one third of the world's bauxite reserves, of which a very small amount has been exploited, large reserves of gold, and the world's largest unexploited iron ore deposits, the sector has been growing rapidly since 2016, and the potential remains enormous. FDI in the mining sector has been a key driving force for the economy, and it is expected to accelerate. While there is some potential to move up the value chain—from bauxite to alumina and steel production—the sector currently accounts for less than 6 percent of total employment and contributes less than ¼ of total GDP, with benefits going to a relatively small share of the country. Therefore, energizing the non-mining sector will be critical in developing a more sustainable and inclusive medium-term growth model, which can create jobs and reduce poverty. Furthermore, diversifying the sources of growth away from a narrow set of commodities will also reduce Guinea's vulnerability to exogenous shocks and increasing competition from other market players (e.g., Australia, Indonesia). The IMF's recently developed COVID-19 extension of the DIGNAR demonstrates some of the risks associated with the current growth model, as well as the benefits that could be accrued from pursuing a more diversified growth model.

3. Application of DIGNAR-19 model to The Gambia (Selected Issues)

Summary: Building infrastructure is a key strategic priority of The Gambian government's National Development Plan. The Gambia's status of infrastructure is broadly at the average of peer SSA countries but is significantly below the level needed to achieve the SDGs in 2030. This analysis estimates that, under current and planned policies, The Gambia's infrastructure gap will reach about 15 percent of GDP in 2030. Strong government's active policies – to improve domestic revenue mobilization, enhance spending efficiency, and attract private investment – could cover about two-thirds of this infrastructure gap. Support from development partners will be important to address the remaining gap. Reliance on borrowing would lead to a significantly higher public debt, in the current context of limited fiscal space.

4. Application of DIGNAR-19 model to Madagascar (Extended Credit Facility)

Summary: The pace of scaling up set by the government is very ambitious, as public investment in Madagascar suffers from low efficiency and under-execution. In recent years, public investment has been under-executed compared to budget plans, especially for externally financed investment. Over 2020-2021, the estimated needs of public investment to realize the country's ambitious reform agenda summarized in the Plan Emergence Madagascar (PEM) are nearly double the projected investment financing under the baseline, at 41 percent vs. 33.5 percent of GDP, respectively. Yet in recent years, budget allocation for public investment has exceeded execution by far, partly reflecting some poor performance in externally financed investment (about two thirds of total public investment), which was planned at 5.5 and 4.6 percent of GDP in the budget laws for 2019 and 2020, but only executed at 4 and 2.7 percent of GDP, respectively. Domestically financed investment stood at only 1.6 and 2.9 percent of GDP in 2019 and 2020, respectively. Identifying and addressing bottlenecks in the efficiency and execution of public investment will be critical to the success of the PEM. A pre-COVID iteration of the IMF Debt-Investment-Growth (DIG) model for Madagascar showed that, holding all else constant, a rise in public investment efficiency to the SSA average could lead to a significant increase in real GDP per capita growth, rising by up to 0.7 percent in 2023 and 0.5 percent each year thereafter compared to the baseline scenario as at end-2019, in addition to boosting private consumption and investment.

5. Application of DIGNAD model to Solomon Islands (Selected Issues)

Summary: This note quantifies additional spending needs for Solomon Islands to achieve key Sustainable Development Goals (SDGs) targets by 2030. The estimate indicates annual additional spending needs of about 6.9 percent of 2030 GDP. Higher investment in energy infrastructure, including on renewable energy, is a key priority to strengthening climate change adaptation and paving the way towards a low-carbon transition. Creating fiscal space for projects with climate-proofing components through budget reallocation, while improving spending efficiency, would raise economic returns by building climate resilience. An integrated financing strategy with a mix of additional concessional financing and front-loaded fiscal measures, including domestic revenue mobilization, is needed and should be properly sequenced to achieve SDGs by 2030. The SDGs and climate commitment should be integrated into the existing PFM reform agenda to achieve climate-sensitive development goals.

6. Samoa: Technical Assistance Report—Climate Macroeconomic Assessment Program (CMAP)

Summary: Samoa is highly exposed to natural hazards such as tropical cyclones, earthquakes, tsunamis, droughts, and floods. These damage economic growth and impact debt sustainability adversely. Increasing frequency and intensity of coastal storms are likely to amplify damage to infrastructure and livelihoods. Slow-moving climate stresses such as sea level rise and increasing heat hazard are also likely to impact potential growth in the main economic sectors such as agriculture, fisheries, and tourism. The assessment draws on the analysis based on the DIGNAD (Annex I).

7. Selected Issues Paper: Enhancing Resilience to Climate Change (DIGNAD model application for Uganda)

Summary: Uganda is prone to natural disasters that climate change is making more frequent and impactful. Besides the direct damages to lives and livelihoods, the effects of disasters, such as floods and droughts, extend to the wider economy. As recognized by the Third National Development Plan, climate adaptation and preparedness are essential to ensure the resilience of the population and the economy to extreme weather events. Debt-Investment-Growth-Natural-Disasters (DIGNAD) model simulations underscore that building adaptation infrastructure can reduce by two thirds the GDP losses at the trough triggered by a disruptive disaster and almost halve the resulting fiscal gap. Given the financial challenges posed by scaling up adaptation, international support—and scaling up capacity to access donor funds—is required to meet ambitious adaptation plans.

8. Selected Issues Paper: Building Resilience to Natural Disasters: Growth and Income Distribution Implications of Alternative Government Financing Instruments (Dominica)

Summary: Natural disasters disproportionally and recurrently affect small state economies like Dominica. This research develops a multi-sector general equilibrium model and studies the macroeconomic and distributional implications of financing resilience-building using different fiscal instruments. The results indicate that investing in resilience capital is efficient despite its high economic cost, but the financial instrument used to mobilize revenue matters. When building resilience is financed using donors' support or by cutting unproductive government spending, the return of building resilience is higher than when it is financed via distortionary taxes.
Income and Gender Inequality

9. Selected Issues Paper: Towards More Gender Equality in Kenya

Summary: This research analyzes Kenya's multi-faceted profile of gender inequality and shows, using a general equilibrium model, that greater gender equality would generate substantial macroeconomic and socioeconomic benefits. It discusses several gender gaps in Kenya, including in education, access to health services, employment, earnings, and financial inclusion. It also assesses legal provisions and customary and religious practices that contribute to reinforcing gender gaps. Using a general equilibrium model, several policy options to alleviate gender inequality are studied, including, as a novel contribution, policies that would reduce time spent by women fetching safe water. Amongst studied options, policies aimed at reducing the educational gender gap and discrimination in the informal sector have the largest positive effects. The paper also offers policy advice on how to further increase policy efficiency and ensure that the COVID-19 crisis does not erode too much of the recent gains towards gender equality.

Output 2.2 – Uptake by Country Authorities

Forecasting and Policy Analysis Systems Assistance (FPAS) to Ghana (Virtual Technical Assistance)

Summary: The IMF-FCDO team continues to support the Bank of Ghana (BoG) in its efforts to build and develop analytical capacity, FPAS processes and organization. In this context, a new virtual FPAS TA (Forecasting and Policy Analysis Systems Technical Assistance) mission was conducted during November 2021. The first part of the mission was dedicated to enhancing short-term forecasting architecture, revisiting and conducting various counterfactual simulations with the Quarterly Projection Model (QPM), and studying the performance of BoG staff historical forecasts. The second part of the mission focused on supporting the BoG staff in using their extended modelling framework to produce the model-based analysis for the November 2021 forecast round. In parallel, the Institute for Capacity Development Department's FPAS TA team is being closely engaged with the BoG modelling team on documenting various components of BoG's FPAS organization, with outputs in the form of

User Guides for internal use as well as various external publications, like the prospective IMF Working Paper on Ghana QPM.

Output 2.1.a and 2.2.a Courses Offered to IMF Staff

10. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)

Summary: This online course, presented by the Institute for Capacity Development and the Research Department, explains how to analyze the relation between public investment, growth, and public debt dynamics using two dynamic structural models: the Debt, Investment, and Growth (DIG) model and the Debt, Investment, Growth and Natural Resources (DIGNAR) model. The course presents and discusses the key pieces of these models (the investment-growth nexus, the fiscal adjustment, and the private sector response) and their interactions, which helps learners understand and assess the macroeconomic effects of public investment scaling-up plans, including on growth and debt dynamics. It elaborates on important factors that may shape these effects such as the type of fiscal financing, the rate of return of public capital, the efficiency of public investment, and the capacity of governments to mobilize revenues. Over the past decade, the DIG and DIGNAR models have gained wide acceptance for policy work. They have complemented the analyses done with the IMF and World Bank Debt Sustainability Framework, with over 65 country applications in the context of Fund-supported programs and surveillance work. They have helped inform policy analysis, based on qualitative and quantitative scenario analyses, on issues not only related to public investment surges but also to fiscal consolidations, cash transfers to poor households, the mix of public current and capital expenditures, the efficiency of public spending and tax administration, and the collapse of commodity prices, among other areas. The course will illustrate some of these applications and explain how to interpret the output of these policy scenario analyses.

11. Course: Macro-Structural Training: Distributional Impact of Policies and Reforms

Summary: This clinic is one in a series of training clinics on macro-structural issues. The course provides an overview of the IMF's analytical and policy work on inequality and its operationalization in country work. Specifically, it discusses the multifaceted nature of inequality drawing from case studies conducted in the context of surveillance. It then zooms in on the role of fiscal policy—the main tool for redistribution available to the authorities—with a focus on taxes, transfers/social spending, followed by an overview of the latest tools available to Fund economists. Two of the four sessions focus on the two new user-friendly templates produced by Fund staff: (i) a template to assess the distributional incidence of fuel subsidy reform; and (ii) a multi-sector heterogeneous agents model and the associated user-friendly toolkit to analyze the macro and distributional implications of alternative policy reforms (such as revenue mobilization, infrastructure investment, tax consolidation, and measures to counteract possible negative effects such as cash-transfer or universal base income).

12. Course: Clinic on Diversification, Structural Transformation, and Reforms in Developing Economies

Summary: This clinic is one in a series of training clinics on macro-structural issues. The clinic will provide an overview of IMF analytical and policy work on diversification, structural transformation, and reforms and its operationalization in country work. It will shed more light on the role of diversification in the macroeconomic performance of developing countries by considering diversification not just in trade, but also in the broader domestic economy. Diversification involves significant changes in both the type and quality of goods produced and exported. However, there are major differences across regions and countries in the degree to which they have succeeded in carrying out such economic transformation. Increases in diversification have been associated with lower volatility and higher growth in developing countries. This clinic will also discuss the approach and priorities to help guide the Fund in supporting countries' macrostructural policy needs. Empirical analysis finds a broadly positive relationship between structural reforms and productivity; however, the potential payoff from different reforms varies across income groups. The course will discuss some country cases to reinforce the empirical findings and resonate with historical reform patterns.

13. Course: Clinic on Labor and Product Market Reforms

Summary: This clinic is one in a series of training clinics on macro-structural issues. Structural reforms are expected to become a growing focus of staff's advice as economies seek to recover from the Covid-19 crisis with limited macroeconomic policy space. High on the list of priorities are labor and product market reforms, particularly in advanced and emerging market economies. The clinic will give an overview of the relevant regulations and institutions, highlighting critical issues in a surveillance context —short-term effects, interactions between reforms, interplay between reforms and macroeconomic conditions and policies, both in general and in the Covid-19 context. The clinic will also review available databases and analytical frameworks (both model-based and empirical, the latter including macro, sectoral, and firm-level analyses) for quantifying the impact of reforms on macroeconomic outcomes. The clinic's overarching goal is to better equip staff with the tools needed to analyze macro-critical labor and product market issues and the effects of reforms in these areas in an IMF surveillance context.

14. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

Summary: With the support from the FCDO and the Government of Japan, the IMF developed an additional module (on model-based forecasting) for the existing online course on Monetary Policy Analysis and Forecasting (MPAFx), which has been supporting capacity development in low-income countries. The new module has been completed and was included in the February 2022 MPAFx offering.

Output 2.2.a – Courses Offered to Country Authorities

1. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)

Summary: This online course, presented by the Institute for Capacity Development and the Research Department, explains how to analyze the relation between public investment, growth, and public debt dynamics using two dynamic structural models: the Debt, Investment, and Growth (DIG) model and the Debt, Investment, Growth and Natural Resources (DIGNAR) model. The course presents and discusses the key pieces of these models (the investment-growth nexus, the fiscal adjustment, and the private sector response) and their interactions, which helps learners understand and assess the macroeconomic effects of public investment scaling-up plans, including on growth and debt dynamics. It elaborates on important factors that may shape these effects such as the type of fiscal financing, the rate of return of public capital, the efficiency of public investment, and the capacity of governments to mobilize revenues. Over the past decade, the DIG and DIGNAR models have gained wide acceptance for policy work. They have complemented the analyses done with the IMF and World Bank Debt Sustainability Framework, with over 65 country applications in the context of Fund-supported programs and surveillance work. They have helped inform policy analysis, based on qualitative and quantitative scenario analyses, on issues not only related to public investment surges but also to fiscal consolidations, cash transfers to poor households, the mix of public current and capital expenditures, the efficiency of public spending and tax administration, and the collapse of commodity prices, among other areas. The course will illustrate some of these applications and explain how to interpret the output of these policy scenario analyses.

In the last run of the course, 146 participants were active on the online platform, of which more than 20 percent were government officials. Both among the general public and among government officials, about half of active participants were from low- or lower-middle-income countries and, among government officials, more than half were from the sub-Saharan African region. The pass rate, among active participants, was 60 percent for the general public and 81 percent for government officials.

2. Presentation to Authorities: Enhancing Resilience to Climate Change in the Maldives

Summary: The team presented an analysis on climate adaptation to the Maldivian authorities, in the context of the Article IV consultation. The increased likelihood of adverse climate-change-related shocks calls for building resilient infrastructure in the Maldives. Fulfilling these infrastructure needs requires a comprehensive analysis of investment plans, including with respect to their degree of climate resilience, their impact on future economic prospects, and their funding costs and sources. This analysis touches upon these challenges, through calibrating a general equilibrium model (DIGNAD). The main finding is that there is a significant dividend associated with building resilient infrastructure. Under worsened climate conditions, the cumulative output gain from investing in more resilient technologies increases up to a factor of two. However, given the Maldives' limited fiscal space, particularly after COVID-19, the international community should also step-up cooperation efforts. It is also shown that it is financially convenient for donors to help build resilience prior to the occurrence of a natural disasters rather than helping finance the reconstruction ex-post.

3. Course: DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemic in Emerging and Developing Countries at IMF CCAMTAC.

Summary: A webinar on the DIGNAR-19 model was delivered through the IMF CCAMTAC (capacity development center based in Kazakhstan). The webinar was well attended by the participants including country officials, joining from 13 countries from the region (Caucasus, Central Asia, and Mongolia) including 5 low-income countries—Georgia, Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan. The participants showed a high level of satisfaction regarding the effectiveness of presentation and usefulness of the material.

4. Course: Gender equality and macroeconomics (in collaboration with the African Training Institute (ATI) and UN Women) to African country authorities

Summary: From January 24th to February 3rd, the team was directly involved in a course on gender equality and macroeconomics in collaboration with the Africa Training Institute (ATI) and UN Women. The audience of the course was country authorities from selected African countries.

5. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

Summary: With the support from the FCDO and the Government of Japan, the IMF developed an additional module (on model-based forecasting) for the existing online course on Monetary Policy Analysis and Forecasting (MPAFx), which has been supporting capacity development in low-income countries. The new module has been completed and was included in the February 2022 MPAFx offering.

Output 3.1 – High-level Policy Conferences Attended by IMF Senior Staff

9. Climate-Related Natural Disasters—Macroeconomic Effects and Policy Responses

   Summary: IMF staff organized a conference, held virtually on June 16, 2021, bringing together policy makers, experts and top-tier academics. The conference was opened with remarks by RES director Gita Gopinath, who introduced a high-level policy panel comprising Managing Director Kristalina Georgieva, Mia Mottley (Prime Minister, Barbados), and Richard Randriamandrato (Minister of Economy and Finance, Madagascar). The panel was conducted as a conversation moderated by Haslinda Amin (Bloomberg Television). Panelists discussed how climate change exacerbates existing vulnerabilities to macro-critical natural disasters, such as droughts, floods, and hurricanes. The benefits of the debt service suspension initiative and other novel forms of debt relief, such as disaster clause provisions in Barbados's public debt, were extensively acknowledged. Two technical sessions covered several topics, encompassing the impact that disasters have on the saturation of the economy with safe assets, the effects of climate change on local sectoral specialization, the role of financial adaptation and monetary policy, and how to include disasters in macro-fiscal frameworks.

10. Supporting Food Security in Sub Saharan Africa Amid the COVID Pandemic and Climate Change

    Summary: Sub-Saharan Africa is highly vulnerable to climate change, with a marked increase in the frequency and intensity of natural disasters threatening food security in the region due to the heavy reliance on rain-fed agriculture, and weak infrastructure and institutions. These challenges are compounded by the adverse effects of the COVID-19 pandemic, which has aggravated food chain disruptions, broadly raised food prices, eroded real incomes, and increased the number of undernourished in the region to reach 264 million in 2020. This discussion comes at a critical time when the IMF is looking to identify viable options to support more vulnerable member countries in their pandemic recovery and achieve resilient and sustainable growth, including through voluntary channeling of some of the SDRs from countries with strong external positions to those most in need.

11. COVID-19 and Fragile States: Promoting Resilient Recovery for the Most Vulnerable Communities

Summary: This event aimed to take stock of the economic and social impact of COVID-19 in fragile and conflict-affected states (FCS), and identify pathways for progress toward resilient recovery. Speakers will reflect on responses to the pandemic and on opportunities to scale up joint multilateral support in the most fragile settings, where climate risks, food insecurity, and active conflict often overlap. The event will also highlight the Fund's strong commitment to FCS – particularly through the development of an FCS Strategy to further enhance and tailor Fund's support to FCS facing complex and unique challenges.

12. Macroeconomic Fragile States post COVID-19: What Stabilization Policies?

Summary: A webinar was organized at the Euro-Mediterranean Economists Association to discuss the increased fragility in the Middle East and Africa, particularly in the context of COVID-19. The discussion was based on the book "Macroeconomic Policy in Fragile States"—coedited by Ralph Chami, Raphael Espinoza, and Peter Montiel—that covers the challenges of developing and implementing macroeconomic policy in Fragile and Conflict-Affected States and provides the backbone to grasp the multifaceted fragility and how to mitigate via analytical frameworks and case studies. The webinar also provided avenues for stabilization policies anchored in fiscal policy, trust, governance and private sector involvement. Discussions on the role of international partners, coordination and solidarity to tackle fragility were also featured.

13. How to Achieve Inclusive Growth

Summary: Rising inequality and widespread poverty, social unrest and polarization, gender and ethnic disparities, declining social mobility, economic fragility, unbalanced growth due to technology and globalization, and existential danger from climate change are urgent global concerns. These issues are intertwined and require a holistic framework. A new book by the IMF presents a unified plan for combatting these economic and social disparities. The CGD invites you to the launch of this book on How to Achieve Inclusive Growth published by Oxford University Press, followed by a discussion with a distinguished panel.

14. Presentation of "EAC: Challenges to Monetary Policy Space and Transmission" at a seminar during the 2021 Annual Meetings, "Meeting with EAC Ministers of Finance and Central Bank Governors"

Summary: For a virtual meeting with East African Community (EAC) Ministers of Finance and Central Bank Governors on October 19th during the 2021 Annual Meetings, the MRLIC team collaborated with the IMF African Department and provided input to the presentation on "EAC: Challenges to Monetary Policy Space and Transmission" that took place during this meeting. This high-level event by invitation during the Annual Meetings covered the monetary policy developments since the start of the pandemic and the path going forward for the

EAC countries. The discussants to the presentation included Mr. Atingi-Ego (Deputy Governor of the Bank of Uganda) and Mr. Rwangombwa (Governor of the Central Bank of Rwanda). The welcoming and closing remarks were given by Mr. Abebe Aemro Selassie (Director of the IMF's African Department).

15. IMF-FSB joint Early Warning Exercise: Potential Loss from Human Capital Scarring Due to the Pandemic

Summary: The pandemic has posed a serious risk to human capital accumulation and may lead to a deep scarring effect on long-term economic outcomes. Such human capital scarring was one of the significant downside risks considered in the confidential Early Warning Exercise, jointly conducted by the IMF and the Financial Stability Board (FSB) and presented to the International Monetary and Financial Committee (IMFC) during the World Bank-IMF 2021 Annual Meetings. As part of the FCDO-IMF research collaboration, the team that examined education losses during the pandemic (April 2021 World Economic Outlook, Chapter 2, Box 2.2) contributed to this Early Warning Exercise by estimating long-term GDP losses from school closures and other pandemic-related disruptions under a downside risk scenario. The analysis indicated a potentially higher scarring effect due to more school closures in low-income countries, contributing to gathering the strong support for low-income countries, in this IMFC meeting.

16. Supporting Fragile and Conflict-Affected States: The IMF FCS Strategy

Summary: The continuing pandemic poses a significant risk that the divergence between fragile and conflict-affected states (FCS) and the rest of the world will widen—and persist. As featured in the IMF's chart of the week published on January 21, 2022, an analysis produced as part of the FCDO-IMF research collaboration shows that per capita incomes in FCS will not recover to near their 2019 levels until 2024 based on IMF projections; and by then, the gap with pre-pandemic per capita income trends is set to remain larger for FCS than for other countries. Low-income FCS are particularly at risk to be left behind. The outputs and ongoing workstreams under the FCDO-IMF research collaboration are also featured as existing and forthcoming analytics on FCS in the IMF's newly established comprehensive strategy to strengthen its support to FCS, discussed at the IMF Board Meeting on March 9 with a launching event on March 18.

17. Output 3.2 – Results of Research Reflected in IMF Policy Papers

Fiscal Monitor/WEO/REO/SDN/Board Presentations

5. October 2021 WEO Box 2.1: Food Insecurity and Prices during COVID-19

   Summary: Nominal global food prices have risen more than 40 percent since the start of the pandemic. The prices of goods sold in a local market—a more relevant indicator, especially if the good is produced domestically (for example, cassava in central and western Africa)—were influenced by numerous local factors, including supply and demand, government policies, exchange rates, transportation costs, and income levels. The dual shock of rising food prices and falling incomes will exacerbate inequality. In low-income countries, where food makes up about 40 percent of the consumption basket, staple food price growth raised consumer price index inflation 5 percentage points. Within countries, the poorest households spend proportionately more on food (people in sub-Saharan Africa with consumption below $2.97 a day spend about 58 percent of their income on food).

6. Staff Climate Note on Macro-Fiscal Implications of Adaptation to Climate Change (joint with FAD)

   Summary: Adaptation to climate change is an integral part of sustainable development and a necessity for advanced and developing economies alike. How can adaptation be planned for and mainstreamed into fiscal policy? Setting up inclusive coordination mechanisms and strengthening legal foundations to incorporate climate change can be a prerequisite. This Note identifies four building blocks: 1. Taking stock of present and future climate risks, identifying knowledge and capacity gaps, and establishing guidance for next steps. 2. Developing adaptation solutions. This block can be guided by extending the IMF three-pillar disaster resilience strategy to address changes in both extreme and average weather and would cover the prevention of risks, the alleviation of residual risks, and macro-fiscal resilience. 3. Mainstreaming these solutions into government operations. This requires strengthening public financial management institutions by factoring climate risks and adaptation plans into budgets and macro-frameworks, and in the management of public investment, assets and liabilities. 4. Providing for transparent evaluations to inform future plans. This involves continually monitoring progress and regularly updating adaptation plans.

7. Board Presentation: The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work

   Summary: IMF staff presented to the IMF Board the findings of an inter-departmental working group established to organize work on the cross-cutting issue of diversification to boost growth, resilience, and job creation in low-income countries. Advice to national policymakers in lower-income countries initially focused on promoting diversification via measures to improve the business environment (horizontal policies), but country authorities have repeatedly posed questions on specific sectoral policies and interventions. The working group therefore sought to examine both the frequency of such interventions (vertical policies) and what policy lessons could be drawn from the examination of the recent literature, surveys of country teams, and country case studies. One conclusion was that horizontal and vertical policies are better viewed more as complements than substitutes: while vertical policies carry risks, particularly in circumstances of weak capacity and vulnerability to policy capture by established firms, there are also a number of cases where a mix of these policies supported substantial diversification over time.

8. October 2021 MCD REO: A fragile recovery continues in the Middle East and Central Asia region.

   Summary: Regional Economic Outlook for the Middle East and Central Asia for October 2021 discusses the pandemic impact on poverty as part of longer-term risks for the region. The report mentions that "about 7 million more people are estimated to have entered extreme poverty during 2020-21 in the region compared to pre-crisis projections," based on the estimates produced by the MRLIC team.

Output 3.2.a – Results of Papers Reflected in IMF Board Discussions and Papers
Policy Papers discussed by the IMF Executive Board

9. Box in Board Paper. Reaching the Pre-COVID Convergence Path Through the Lens of a Dynamic General Equilibrium Macroeconomic Model [in Macroeconomic Developments and Prospects In Low-Income Countries—2021]

Summary: This assessment uses a dynamic general equilibrium macroeconomic model to explore the effect of the additional fiscal spending assumed for LICs on their convergence path. The simulation for the average LIC suggests that the path of public investment considered for 2021-25 will lead to an acceleration of growth, compared to the WEO baseline scenario, and be almost sufficient for the average LIC to get back to the pre-COVID convergence path by 2025.

10. Section in Board Paper: The International Monetary Fund's Strategy in Fragile and Conflict-Affected States (FCS)

Summary: The continuing pandemic poses a significant risk that the divergence between fragile and conflict-affected states (FCS) and the rest of the world will widen—and persist. As featured in the IMF's chart of the week published on January 21, 2022, an analysis produced as part of the FCDO-IMF research collaboration shows that per capita incomes in FCS will not recover to near their 2019 levels until 2024 based on IMF projections; and by then, the gap with pre-pandemic per capita income trends is set to remain larger for FCS than for other countries. The outputs and ongoing workstreams under the FCDO-IMF research collaboration are also featured as existing and forthcoming analytics on FCS in the IMF's newly established comprehensive strategy to strengthen its support to FCS, discussed at the IMF Board Meeting on March 9. The per capita income analysis also contributed to an IMF internal brief on FCS and events by the African Department.

11. Output 4.1 – Commissioned Papers

1. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]
   Asmaa El-Ganainy, Ekkehard Ernst, Rossana Merola, Richard Rogerson, and Martin Schindler

   Summary: Labor earnings are the dominant income source for most individuals. Thus, an inclusive labor market is key for ensuring inclusive growth. In this chapter we propose four principles that an inclusive labor market will embody: access, fairness, protection and voice. While measuring inclusivity presents challenges, we discuss how data can be used to shed light on the extent of inclusivity and document cross-country trends and stylized facts. We also discuss the role of policy in achieving an inclusive labor market, focusing on the need to rebalance growth; improve risk sharing; and fight discrimination. Several messages emerge. First, some policies entail a trade-off between the different dimensions of inclusivity. Second, it is important to view policies as a bundle, taking into account substitution and complementarities. Third, some policies are win-win, in the sense that they both increase inclusivity and improve overall efficiency.

2. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]
   Barry Eichengreen, Balazs Csonto, and Asmaa El-Ganainy

   Summary: This chapter reviews the academic and policy debate on the association between financial globalization and inequality. The evidence suggests that the distributional impact of financial globalization is context-specific and different types of flows have different distributional implications, though the consensus points to unequalizing effects of capital account liberalization. The overall impact thus depends on the composition of flows, their interaction, as well as on the broader economic and institutional conditions. A comprehensive set of policies, including macroeconomic and financial sector policies, and labor and product markets, is important to enable wider sharing of the benefits of financial globalization.

Output 4.2 – Toolkits

1. DIGNAD

Summary: DIGNAD is a structural dynamic general equilibrium framework to assess quantitatively the macroeconomic effects of natural disasters and associated policy trade-offs in small natural disaster-prone states with a focus on growth and debt, based on Marto, Papageorgiou and Klyuev (2018). The model can be used to evaluate the outcomes of climate-related natural disasters (on macroeconomic variables such as GDP and debt) conditional on a set of ex-ante and ex-post adaptation policies. The model can be calibrated to match country-specific data moments (e.g., the annual return on both standard infrastructure investment and adaptation infrastructure investment). The DIGNAD model has been already used as part of many Article IV Surveillances (e.g., the Solomon Islands, the Maldives, St. Lucia) and is currently being integrated in a capacity development program (Climate Macroeconomic Assessment Program, CMAP).

2. IAPOC Toolkit – An Assessment Toolkit for Monetary Policy Frameworks

Summary: The toolkit provides a multidimensional characterization of monetary policy frameworks (MPFs) consisting of three pillars: Independence and Accountability, Policy and Operational Strategy, and Communications (IAPOC). The IAPOC index captures the soundness of MPFs and challenges the existing paradigm of monetary policy regime classifications. We construct the index for 50 advanced economies, emerging markets, and low-income developing countries, over the period 2007-2018 based on the systematic analysis of central banks' laws and websites. The series enables gauging the great diversity in MPFs, particularly among developing economies and in countries that have reached for a mix of tools in pursuit of multiple objectives.

The toolkit has now disseminated to the IMF staff, with a launching event on May 19, 2022. Ad hoc consultations on MPFs using on this toolkit have been conducted with the IMF country teams, including the following low-income countries: Georgia, Kyrgyz Republic, Kenya, Rwanda, Tanzania, and Uganda.

Output 4.3 – Attendance of External Researchers at High-Level Policy Conferences

1. Presentation of "How to Boost the Post-COVID-19 Recovery? Policy Lessons from Country Applications of the DIGNAR Model" at Villa Mondragone International Economic Seminar in July 2021.
2. Food insecurity in Low-Income Countries at a seminar organized by IMF and the World Food Programme in February 2022.
3. Presentation of "Network Bottlenecks and Market Power" at Society for Economic Dynamics in July 2021.
4. Presentation on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at the 23rd INFER Annual Conference in September 2021.
5. Presentation on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at Southern Economic Association Conference in November 2021.
6. Poster session on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at Allied Social Science Associations (ASSA) Annual Conference in January 2022.
7. Presentation on "Search Externalities in Firm-to-Firm Trade" at University of Bonn in September 2021.
8. Presentation on "Search Externalities in Firm-to-Firm Trade" at STEG conference in January 2022.
9. Presentation on "Search Externalities in Firm-to-Firm Trade" at CSAE conference, University of Oxford in March 2022.
10. Keynote Speech: Will the AI Revolution Cause a Great Divergence? At The 2nd Applied Macroeconomics Forum in December 2021.
11. Presentation on "Structural Reforms and Elections: Evidence from a World-Wide New Dataset" at NBER Summer Institute in July 2021.
12. Presentation on LDC economic development and challenges at UN LDC Conference in November 2021.
13. Presentation at the webinar "Macroeconomics of Climate Change" at Africa Training Institute in April 2021.
14. Presentation on Epidemics, Gender, and Human Capital in Developing Countries at an AFRITAC event - "Gender Equality and Macroeconomics: Lessons from East Africa and Beyond" in December 2021.
15. Presentation on "Monetary Policy Frameworks: An Index and New Evidence" at BIS in March 2022.
16. Presentation on the results of the macro-fiscal section of Samoa's CMAP mission to the acting Minister of Finance as well as the management of the Ministry of Finance in March 2022.

Other Outputs

E-newsletters
1. June 2021 Newsletter
2. September 2021 Newsletter
3. December 2021 Newsletter

4. March 2022 Newsletter

Blogs/Article/Press/Other

1. IMF Blog: Fragile and Conflict-Affected Economies Are Falling Further Behind
2. VOXEU Blog: Defying the odds: Remittances held up during the COVID-19 pandemic
3. VOXEU: Blog Investigating the Drivers of Remittance Fees
4. GlobalDev Blog: Public investment for growth: a country's absorptive capacity is key
5. IMF Podcast: Island States Paying Price for Climate Change
6. F&D: Intergenerational Social Mobility in Africa
7. DIGNAR-19 Toolkit Manual

Note: "Spillovers from the War in Ukraine to Low-income Countries" (bilaterally shared with FCDO)

Cedric Okou, John Spray, Filiz Unsal, and Roland Kpodar
Summary: The most important channels through which the war in Ukraine may affect low-income countries (LICs) are its impacts on global food and oil prices and financial linkages. Considering cereals make up two-thirds of the daily caloric intake in LICs and is primarily imported, an increase in global cereal prices may intensify food insecurity concerns. Increases in global wheat prices could bring almost one-to-one increase in local wheat prices, and by itself could result in a 3-5 percent increase in the cost of the consumption basket in many LICs, with a substantially larger impact in countries with high wheat consumption shares and import dependence. LICs could also be affected from oil price spikes as fear of sanctions on Russian exports escalates, and from tightened external financing conditions brought by uncertainty and financial sanctions. These forces are likely to be compounded by the limited policy space in most LICs following the pandemic.

Internal daily newsletters: "Headlines on LICs"

Summary: As the COVID -19 crisis unfolded across the globe in March 2020, we started to circulate a daily email within the team that has the latest articles on COVID-19 and LICs. The idea was to keep our team informed on the latest developments related to COVID-19 in LICs, such as the level of infections, vaccine deployments, and related government policies. It was then expanded to also cover any emerging topics that are important to LICs, such as Ukraine-Russia war, food crisis, inflation, climate change, inequality, gender, etc. The daily email provides a list of headlines with weblinks under each topic from the press, think tanks, academic, civil society, and multilateral organizations, gathered by automated alerts and manual search, and then filtered by judgment by the team member in charge. The newsletter has received positive feedback, and recently, we received a request from the IMF's African Department to add their senior staff and the Regional Studies Division (the team charge of the Regional Economic Outlook for sub-Saharan Africa) in the distribution list. So far, the email has been circulated to about 100 Fund staff.

Internal Presentations (Fund-wide or across Departments)

1. Presentation on "Trade and the COVID-19 pandemic: lessons from French firms" at Surveillance meeting in November 2021.
2. Presentation on "The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work" at Diversification Working Group Seminar in February 2022.
3. Presentation on "Food insecurity in SSA" at RES-AFR joint IMF seminar on February 16, 2022.
4. Presentation on "Food Prices in Sub-Saharan Africa: An Empirical Assessment" at AFR-RES joint IMF seminar on March 31, 2022.

Macroeconomic Research in Low-Income Countries
An FCDO/IMF Research Partnership

Tenth Year Annual Report to FCDO
(for period April 2021—March 2022)

Prepared by the Staff of the Research (Hites Ahir, Futoshi Narita, Cedric Okou, Chris Papageorgiou) and Strategy, Policy and Review (Diego Gomes, Carine Meyimdjui, Roland Kpodar) Departments

June 13, 2022

1. PROGRAM DESCRIPTION

The FCDO and IMF have established the "Macroeconomic Research in Low-Income Countries" as a strategic research partnership, which aims at (a) enhancing the generation of high-quality research on key macroeconomic issues in low-income countries (LICs); (b) ensuring uptake through the design of the research, and its execution in close collaboration with policymakers within and outside the IMF; (c) using the IMF's catalytic power to expand the network of macroeconomic researchers working on LICs; and (d) achieving this as cost-effectively as possible. The project started in March 2012, with the current phase (Phase 4) to conclude on March 31, 2025 (extended from the original end date of March 31, 2023, reflecting a rephasing of the disbursement schedule).

Our research agenda encompasses key components of the macroeconomic challenges facing LICs in the current global environment. We leverage the comparative advantage of the IMF, by designing and implementing frontier analytic tools to address core macroeconomic challenges. The IMF focuses on core macroeconomic and development issues that are critical to achieving sustained and inclusive growth. Many of these issues are at the risk of being neglected by the profession at large: very few macroeconomists work on LICs; very few development economists work on macroeconomics (outside of structural/growth issues); and central banks and other macroeconomic institutions in LICs face capacity challenges.

The program, articulated around five core areas, includes new topics that are being investigated during the fourth phase of the project:

(1) Modelling and understanding policy choices
- For example, monetary, exchange rate, fiscal and structural policies

(2) Understanding macro-financial linkages
- For example, capital flows, financial deepening and inclusion, macro-prudential policies, and transmission of macro-financial shocks

(3) Building resilience
- For example, issues related to natural disaster, climate change, migration, and conflict

(4) Promoting structural change and institutional development
- For example, public investment, growth, and debt sustainability, macroeconomic management of natural resource wealth, growth through diversification, structural reforms

(5) Enhancing inclusion
- For example, income inequality, macroeconomic policy and income distribution, gender and macroeconomics

IMF staff members and project-funded researchers collaborate to produce high-quality research papers aimed at policymakers in LICs and at the country teams at the IMF. To further maximize the policy impact of the project's research outputs, most papers are freely shared with FCDO and external policy makers through FCDO's research portal and a dedicated project website maintained by the IMF. In addition to encouraging uptake of the work by the country authorities as well as the IMF, other crucial components of the IMF-FCDO partnership include designing frameworks to support IMF policy for LICs, presentations at high-level policy conferences, training, commissioned papers, quarterly e-newsletters to a broad network of LIC researchers and policy makers, and project-financed conferences.

Start and End Dates:

Phase I: March 2012 to March 2015
Phase II: April 2015 to March 2017
Phase III: April 2017 to March 2020
Phase IV: April 2020 to March 2025

Countries Covered:

The project covers the countries listed in Table 1. These countries are referred to as "low-income countries (LICs)" in this report.

Table 1. Countries Covered in This Project and Their GNI Per Capita[1]

Country	2011 GNI per capita (US $)	Country	2011 GNI per capita (US $)
Afghanistan	410	Maldives	6530
Bangladesh	770	Mali	610
Benin	780	Marshall Islands	3910
Bhutan	2070	Mauritania	1000
Bolivia	2040	Micronesia	2900
Burkina Faso	570	Moldova	1980
Burundi	250	Mongolia	2320
Cambodia	830	Mozambique	470
Cameroon	1210	Myanmar	NA
Cape Verde	3540	Nepal	540
Central African Republic	470	Nicaragua	1170
Chad	690	Niger	360
Comoros	770	Nigeria	1200
Congo, Rep.	2270	Papua New Guinea	1480
Congo, Dem. Rep.	190	Rwanda	570
Côte d'Ivoire	1100	Samoa	3190
Djibouti	1270	São Tomé and Principe	1360
Dominica	7090	Senegal	1070
Eritrea	430	Sierra Leone	340
Ethiopia	400	Solomon Islands	1110
Gambia, The	610	Somalia	NA
Georgia	2860	South Sudan	984
Ghana	1410	St. Lucia	6680
Grenada	7220	St.Vincent and the Grenadines	6100
Guinea	440	Sudan	1300
Guinea-Bissau	600	Tajikistan	870
Guyana	2900	Tanzania	540
Haiti	700	Timor-Leste	2730
Honduras	1970	Togo	560
Kenya	820	Tonga	3580
Kiribati	2110	Tuvalu	5010
Kyrgyz Republic	920	Uganda	510
Lao PDR	1130	Uzbekistan	1510
Lesotho	1220	Vanuatu	2870
Liberia	240	Vietnam	1260
Madagascar	430	Yemen	1070
Malawi	340	Zambia	1160
Memorandum Item			
Zimbabwe	640		

Source: Fund WEO, World Bank, World Development Indicators, and OP 3.10, Annex C, of July 2012.
Fund Board decision of April 8, 2013, on Eligibility to Use the Fund's Facilities for Concessional Financing.

[1] The countries included in this table are those that were eligible for the IMF concessional financing under the Poverty Reduction and Growth Trust (PRGT) as of 2013, and the table includes the countries that had graduated since then (e.g., Bolivia and Mongolia) but continued to face policy challenges similar to those in the PRGT-eligible countries.

2. OVERVIEW OF THE YEAR

Progress and Achievements

While operating in a challenging global environment, the MRLIC program has successfully managed to maintain strong momentum and performed outstandingly in delivering top academic publications and high-quality insights in policymaking in LICs. The pandemic has exacerbated uncertainty throughout the year, as waves of COVID-19 infections hindered travel and in-person missions at a time when many countries needed unprecedented support. The team worked remotely in this challenging context, and yet, reached or exceeded high targets on 10 out of the 13 output indicators considered under the program. Of the remaining three output indictors, two met or exceeded the middle targets while only one is below the middle target partly due to an unexpected change on a planned delivery.[1]

This high-level performance was achieved, despite a reduction in the annual funding amount due to a rephasing of disbursements under Phase 4. The annual project funding for this year was reduced from £1.7 million to £0.8 million while the total project amount remains the same.[2] This unexpected funding reduction for this year posed a significant challenge, particularly because most outputs under the MRLIC program require the activities to be stable and continuous. The team has yet managed to contain disruptive effects by reallocating resources from reduced travels to other key activities and by receiving a complementary funding from the IMF's COVID-19 Crisis Capacity Development Initiative (CCCDI), funded by external partners.[3] This expansion of the funding sources is a key achievement in line with a recommendation made in the last year's FCDO Annual Review.

The MRLIC team has also swiftly responded to emerging issues in LICs such as food insecurity (1st item of Outcome Indictor 1), facilitating policy discussions at the IMF to be more specific to LICs. Surging food and energy prices, exacerbated by pandemic-related disruptions, shortages from the war in Ukraine, and unfavorable climate conditions, have made food insecurity a burning policy issue alongside inflation, debt, inequality, gender, and climate change in LICs. The MRLIC team organized a high-level conference to discuss food insecurity in SSA and identify viable options to improve the availability, access, and uses of nutritious foods. The team also provided internal presentations to shed more light on the urgency to act and provided tailored tools to policymakers through IMF country teams. Additionally, the team produced a note on the spillovers from the war in Ukraine to LICs, highlighting their dependence on food imports and proposing key policy recommendations.

Another area that the MRLIC team contributed this year to further enhancing the integration of LIC aspects in IMF policy discussion is debt sustainability under climate-related challenges (2nd item of Outcome Indictor 1). A new toolkit, Debt-Investment-Growth-Natural-Disasters (DIGNAD) model, started to increase its applications to LICs, and more are forthcoming. Furthermore, the DIGNAD model was integrated to part of the IMF's newly branded technical assistance program on climate

[1] Output indicator 3.2.a missed the middle target by one output. This is partly because the work on diversification was originally planned to be a Board Paper (counted toward 3.2.a) but turned out to be a Board Presentation (counted toward 3.2 but not 3.2.a), according to the change in the IMF Board's work plan.

[2] The project disbursement schedule is rephased from equal annual installments of £1.7 million for three years until March 2023 to £1.7 million for the first year; £0.8 million for the second year; £0.9 million for the third and fourth years; and £0.8 million for the fifth year. The rephasing extends the end date by two years to March 31, 2025, while the total amount kept unchanged at £5.1 million for Phase 4.

[3] The description of the project supported by the CCCDI is summarized as follows: "A capacity development project to help fulfill the urgent need to support policymaking in low-income countries and low-end emerging market economies, focusing on climate change and inequality under the COVID-19 pandemic." Its aims and scope are broadly overlapped with those of the MRLIC, but there are two differences: (1) the CCCDI-funded project covers not only LICs but also low-end EMEs; and (2) topics are restricted to "climate change" and "inequality". Therefore, the outputs of the CCCDI-funded project are counted towards the output targets for the MRLIC, only when these outputs are assessed to be also within the aims and scope of the MRLIC. The CCCDI is supported by the following partners: Belgium, Canada, China, Germany, Japan, Korea, Spain, Singapore, and Switzerland. The CCCDI funding for the fiscal year 2022 amounts to USD 1.2 million.

change, Climate Macroeconomic Assessment Program (CMAP), primarily led by the IMF's Fiscal Affairs Department, collaborating with external partners (e.g., World Bank, regional development banks, World Resources Institutes). In the first pilot case of Samoa, DIGNAD simulations inform the policy advice to advocate additional climate-adaptation investment, which would promote long-term debt sustainability even with upfront concessional borrowing to finance the investment.

Commending the FCDO-IMF partnership, the IMF First Deputy Managing Director, **Gita Gopinath**, stated "As countries around the world emerge from the pandemic, policymakers are grappling with daunting economic, social, environmental, and security challenges. In particular, spillovers of the war in Ukraine have worsened COVID-related supply chain disruptions, triggered food and energy price spikes, and aggravated food insecurity. These issues are more acute in low-income countries, and the IMF is committed to helping those affected countries achieve macroeconomic stability and inclusive prosperity. In this regard, our fruitful partnership with FCDO has boosted our research work, contributed to better understand both long-standing and new challenges that low-income countries face, and bolstered the design and delivery of the IMF's policy assistance."

The IMF Executive Director for 23 African countries (OEDAE), **Ita Mannathoko**, has also been very appreciative of the project's achievements and noted "Our constituency welcomes the rigorous analytical and policy work done under this joint FCDO-IMF project. Over the years, this partnership has effectively tackled key conjunctural and structural issues that impede macroeconomic stability in low-income countries. The cutting-edge research on debt and growth amid the pandemic, food insecurity and inflation, inequality and gender gaps, and climate change, among other burning issues, have helped better tailor the Fund's policy advice and strengthen capacity building engagements in low-income countries."

The research outputs produced under the MRLIC continued showing a growing impact this year. Research papers continued to be published in leading mainstream academic journals (*The Review of Economics and Statistics*) and top field journals (*Energy Economics, Journal of Monetary Economics, Journal of Development Economics*), among other reputable journals (see Section 3, Output 1.2), even though journal publication in general has become increasingly difficult.[4] Following a recommendation, the team did a further analysis to gauge the impact of the research papers beyond the number of papers.[5] Citations to our research papers increased to 3,326 from 1,742 reported last year. This leads to the average of 15 citations per article over 218 distinct intellectual entities produced cumulatively until Year 10, with 40 articles cited more than 20 times, comparing the average of 21 citations over the publications in the recent 5 years (a metric known as the 5-year Impact Factor) for the most widely cited journal in economics (*The Quarterly Journal of Economics*). Of the 3,326 citations, 88 percent was made by external papers with no IMF or FCDO affiliation, up from 83 percent last year. IMF Working Papers are also widely cited, both internally and externally, with the number of downloads going up to 140,000 from 128,000 last year, with the average of 800 per paper.

The MRLIC research work has been also actively circulated to a broader readership on social media and other platforms. For instance, the Twitter activity over "The World Uncertainty Index" started with a quote from Robin Wigglesworth—book author and editor at the Financial Times with about 65 thousand followers. Within four months of its February 2022 publication, "The World Uncertainty Index" garnered attention from 28 Twitter accounts with an upper bound of 252,209 followers. "The World Uncertainty Index" was recently featured in an IMF blog by the IMF Management on the risk of geo-economic fragmentation, prepared for the World Economic Forum in Davos in May 2022 and widely covered by the news media. Global policy priorities listed in this IMF blog includes debt vulnerabilities in LICs at this highly uncertain conjuncture.

[4] For example, see Heckman and Moktan (2020, p.420) in the case of top 5 journals in economics.

[5] The IMF Library team (Gladys K. H. Mitchell) compiled citation data from Lens.org, Altmetric, and Overton. The large increase in citations also reflects an expanded coverage of these three sources. The IMF Library team also conducted the analysis on social media and other platforms. The number of downloads of the IMF Working Papers was provided by the IMF's Communication Department (Axana Abreu Panfilova, Begona Nunez Allue).

Like in previous years, the outcomes of this partnership have been presented in high-level conferences and seminars and reached a wide range of audiences, including senior staff, other international organizations, governments, academics, and membership citizens across the world. The thematic results and tools developed under the project have continued to inform policymaking in LICs and strengthen the Fund's assistance to LICs, in building resilience to multiple crises. These outputs have been featured in IMF flagships and policy documents such as the World Economic Outlook (WEO), various Regional Economic Outlooks (REOs), IMF Board papers and presentations, Article IV Staff Reports, and technical assistance reports. Various courses and toolkits have also been delivered on Debt-Investment-Growth models (DIG, DIGNAR, DIGNAR-19, DIGNAD), monetary policy frameworks, inequality, diversification, and labor market reforms.

Also, the MRLIC outputs were outreached through other outlets to facilitate uptakes by external researchers as well as IMF staff (see Section 3, Other Outputs). Many of the MRLIC outputs were featured in well-known communication outlets such as IMF Blog, F&D, VOXEU, and GlobalDev. A well-received quarterly newsletter provided timely updates, highlighting new deliveries. An internal daily newsletter on "developments in LICs", created by the team at the onset of the COVID-19 pandemic in March 2020, gained strong traction within the IMF, particularly from the IMF African Department, of which the newsletter was requested to be circulated to the management-level staff.

As recommended, the advisory committee on the IMF-FCDO partnership has been formed last year from the IMF side. The members include Ceyla Pazarbasioglu (IMF Director of Strategy, Policy, and Review Department), Antonio Spilimbergo (IMF Deputy Director of Research Department), Michael Atingi-Ego (Deputy Governor of the Bank of Uganda), and Christopher Adam (Professor at University of Oxford). The committee will be completed by one representative of the FCDO as per the terms of references prepared by the IMF team and shared with the FCDO.

Challenges

The major challenge that the MRLIC program faced this year was the unexpected reduction in the annual funding amount by more than a half, as mentioned above. The budget change compressed much-needed funds to effectively operationalize the work program in a very difficult global environment. However, proactive management and a co-funding received from the CCCDI portfolio helped the team to maintain a high performance. Without these efforts, only about 60 percent of the current output would have been delivered. The budget change posed a risk to discontinue funding some critical needs such as fees for exclusive commercial databases that are essential to conduct original and high-quality research. In a tight budgetary environment, those fees would be among the first items to be cut, which would hamper the ability of the project team to deliver cutting edge analytical tools to support policy making in LICs. In addition, stable funding is key to supporting contractual positions. The contractual staff members are core contributors to our projects, and without their contributions, ongoing workstreams would have significantly lost accumulated human capital, in addition to being delayed substantially. In addition to the budget change itself, the uncertainty over the budget posed a challenge in renewing employment contracts (critical to attract and retain high-caliber staff) and hiring new contractual staff.[6]

Spillovers from the war in Ukraine also increased requests from IMF membership and weighed on the speed of the production of the MRLIC program outputs, including this Annual Report itself. The dire conditions in many LICs have been accentuated by the lingering uncertainties of new waves of COVID-19 infections, heavy debt burdens, soaring energy prices, and escalating food insecurity. These multiple crises could trigger social unrest, undermine economic growth, and erode living conditions. This entails frequent priority changes to respond to urgent requests from IMF membership. Upon a shift in the IMF board agenda due to urgent member country requests, the team had to change the plan and worked on a board presentation on the COVID-19 variants and speed of vaccination rather than writing a board paper as initially planned. While the team remains committed to keep the momentum in producing thoughtful and tailored analyses to assist LICs, the additional layer of issues

[6] In this context, the MRLIC team greatly appreciated the early disbursement of part of the rephased third installment (£632,000 out of £900,000) in March 2022, allowing us to fulfill constructive obligations for FY2023 (Year 11).

induced by the war in Ukraine—on the back the pandemic related disruptions, together with FCDO budget cuts will likely weigh on already stretched staff. The team would welcome FCDO's views on how to best calibrate the project's expected outputs amid substantial budget cuts.

As recommended in the last year's Annual Review, the team explored effective ways to expand the researcher base on macro development. Commissioning papers to external researchers faces some challenges as discussed previously. The team identified that involving junior researchers at an early stage of their careers has proven successful. Many of such junior researchers pursued research on macro development issues even after their direct involvements with the MRLIC. For example, Matt Lowe (Assistant professor, University of British Columbia), who coauthored an MRLIC output ("The public and private marginal product of capital", 2019, *Economica* 86:342, 336-361), continues to make contributions to the field of macro development. Many research officers also pursued PhD studies on macro development issues at leading research institutions, such as University of Pennsylvania (Ricardo Marto), Northwestern University (Kristina Manysheva), University of Wisconsin-Madison (Sakina Shibuya), University of Maryland (Jun Ge). In this regard, the current model of working with many junior researchers has helped expand the researcher base over the medium term, while also producing high quality outputs in the near term.

Highlights by Five Broad Topics

An overview of this year's main outcomes is presented below across the five broad topics considered under the FCDO-IMF MRLIC project.

<u>(i) Modelling and understanding policy choices</u>

The team has highly performed under this workstream, with published papers in top ranked academic journals. A paper published in *Ecological Economics* found that green spending multipliers are about twice as large as their non-green counterparts. The countries in the sample for green land-use investment are from Africa or other lower-income countries. Another research published in *Energy Economics* suggests that the response of inflation to gasoline price shocks is smaller, but more persistent and broad-based in developing economies. It was also found that while the purchasing power of all households declines as fuel prices increase, the distributional impact is more progressive in developing countries. Research published in the *Oxford Economic Papers* on the implications of food subsistence to monetary policy and inflation found that optimal policy calls for complete stabilization of sticky-price non-food inflation despite the presence of a food-subsistence threshold. Moreover, subsistence amplifies the welfare losses of policy mistakes and raises the stakes for monetary policy at earlier stages of development.

We have made great strides in our work program on monetary policy in LICs. A departmental paper undertook a qualitative assessment of the experience with the Forecasting and Policy Analysis Systems (FPAS) Capacity Development (CD) delivery and uses in the decision-making process by central banks. IMF-FCDO experts delivered online courses on model-based monetary policy analysis and forecasting (MPAFs) to support capacity development in LICs. Operationally, the team has also continued to support the Bank of Ghana (BOG) in building and developing analytical capacity. A virtual FPAS Technical Assistance mission was conducted to enhance the short-term forecasting architecture and conduct a range of counterfactual simulations using the Quarterly Projection Model (QPM) among other objectives.

<u>(ii) Understanding macro-financial linkages</u>

There have been significant deliveries under this topic throughout the fiscal year. A paper on the welfare implications of exchange rate choices in developing agricultural economies has been published in the *Journal of Macroeconomics*. The paper documented that international relative price adjustments exacerbate currency and factor misalignments in shallow labor and product markets. This analysis offered new insights on why exchange rate targeting is implemented in many developing agricultural economies. Another working paper has constructed a novel World Uncertainty Index (WUI) for a panel of 143 individual countries from 1952. The paper showed that the WUI spikes around major global events like the Gulf War, the Euro debt crisis, the Brexit vote, and the COVID-19 pandemic, and predicts significant output losses. Looking at remittances, a separate working paper showed they cushioned the COVID-19 shock by providing lifelines to the poorest.

A key achievement has been made on the construction of the Independence and Accountability, Policy and Operational Strategy, and Communications (IAPOC) index, which synthesizes various pillars capturing the soundness of monetary policy frameworks (MPFs) for 50 economies over time, including LICs. While providing a high-level view of MPFs evolution and benchmarks, the IAPOC index allows for a granular analysis of the performance of subcomponents and gives specific levers to policymakers for improving MPFs. Following a successful rollout, the IAPOC toolkit has been presented at internal and external conferences. This toolkit has been used to strengthen MPF consultations for Georgia, Kyrgyz Republic, Kenya, Rwanda, Tanzania, and Uganda.

(iii) Building resilience

Applications of the DIG-type models continued to support policy discussions in LICs, including Article IV consultations and IMF's program engagements. The team produced a box in the Uganda Article IV Staff Report that estimates the economic gains from structural and fiscal reforms to examine the prospect to achieve a middle-income status over the medium term. Another Article IV Staff Report on Guinea showed that energizing the non-mining sector will help diversify the economy, reduce vulnerabilities to external shocks, and achieve a more sustainable and inclusive growth. A Selected Issues Paper (SIP) on Gambia uncovered that under the current and planned policies, the Gambia's infrastructure gap will reach about 15 percent of GDP in 2030, while an improvement in public policy management could fill up to two thirds of the gap. A Staff Report on Madagascar's program supported by IMF's Extended Credit Facility was also published, highlighting the country's infrastructure gap and the importance of raising public investment efficiency, using DIG model simulations. The team continued to deliver online trainings on DIG and DIGNAR, with wide access to country authorities and IMF staff. There have also been significant deliveries of the DIGNAD model applications. DIGNAD has helped the IMF country team assess that Solomon Islands will need about 6.9 percent of 2030 GDP in investment, in particular in resilient infrastructure and renewable energy, to meet the 2030 Sustainable Development Goals (SDGs). In another application to Samoa, the DIGNAD model was used to estimate the damage to infrastructure and livelihoods of increasingly frequent and severe coastal storms. In the same vein, an Article IV Staff Report on Rwanda found that building adaptation infrastructure can reduce up to two thirds of GDP losses and nearly half of the resulting fiscal gap caused by a natural disaster.

Many papers have been published on this broad topic. An analysis on the strong cyclical relationship between emissions and real GDP growth in both advanced and developing economies, which suggests pro-cyclical mitigation strategies, has been published in the *Journal of Macroeconomics*. Relatedly, a working paper argued for transferring clean energy technologies from advanced economies (AEs) to emerging market and developing economies (EMDEs) given the stronger uptake in climate change mitigation technologies in AEs. Another working paper used theoretical and empirical models to show that climate shocks reduce the positive effect of foreign direct investment (FDI), Official Development Assistance (ODA), and migrants' remittances on economic expansion. These papers underscore the importance of reducing greenhouse gas emissions and greening the economy to bolster the resilience to climate shocks in developing countries.

(iv) Promoting structural change and institutional development

The work on this workstream has been outstanding, with papers published in reputable journals such as *Journal of Monetary Economics*, *Economic Modeling*, and *Scottish Journal of Political Economy*. A publication on the AI revolution and divergence shows that productivity gains of "robots" drive the divergence between developing economies and AEs. The latter group benefits from a higher robot intensity, driven by their endogenously higher wages and stock of complementary traditional capital. Another published paper found evidence of a growth-equity trade-off for some important reforms, with financial and capital account liberalization reforms leading to increases in both growth and inequality. The third publication in this broad area draws the conclusion that reducing mobility barriers through reduced costs for skills acquisition and institutional changes and improving the productivity of traditional farmers must precede policies designed to increase the productivity of modern sectors or reduce transportation costs. A book chapter on the macro-fiscal gains of good governance in SSA has also been published. The chapter contends that oil sector governance reforms could target improving transparency in oil trading and strengthening oversight and accountability of Republic of Congo's national oil company. The MRLIC team have delivered training to sharpen IMF staff's knowledge on diversification, structural transformation, and labor and product markets reforms.

(v) Enhancing inclusion

The considerable amount of work on gender and inclusion has produced outstanding outcomes. A paper published on the *Review of Development Economics* on the distributional effects of government spending shocks found that unanticipated fiscal consolidations lead to a long-lasting increase in income inequality, while fiscal expansions lower inequality. Another research published on *The Review of Economics and Statistic*s used rich micro data from Rwanda to show that a microcredit expansion program improves access to microcredit and reduces poverty when making a way for the population to have accounts in commercial banks. A working paper, also featured as a F&D blog, showed that education and other observable human characteristics shaped intergenerational mobility in Africa though the century. Another paper documented that the rate of primary and secondary school completion has been more negatively affected by epidemics for girls than boys. The results were featured during the October 2021 Annual Meetings, with a video published in IMF social media. The MRLIC team published chapter 7 of the book "The Global Informal Workforce: Priorities for Inclusive Growth", which found that low education has a larger impact on informal employment for women.

The MRLIC provided financial support for production of the book "How to Achieve Inclusive Growth," of which 12 chapters provided insights focused on LICs. The book is freely accessible online. The chapters examine (i) the links between growth, inequality, and poverty; (ii) the potential factors and policies for greater financial inclusion, technological progress and artificial intelligence; (iii) competition and innovation; (iv) trade and other complementary policies; (v) the theory and practice of tax design to achieve an efficient and equitable outcome in support of inclusive growth; (vi) the role of public expenditure in fostering inclusive growth; existing shortfalls and inequalities in the accumulation of human capital; (vii) the main challenges faced by resource-rich nations in promoting equity. Another chapter reviews the science of climate change and the related socio-economic damages. The MRLIC's funding for this book also included the support for two external visiting scholars, one of which was an editor of this book, and each of the two was also a contributor of a chapter. Therefore, these two chapters (one on the financial sector and the other on the labor and product markets policies) were counted toward commissioned papers (Output indicator 4.1).

Throughout the year, the team has done various internal and external seminars and conferences, both virtual and in-person. An internal training (named a "clinic") on distributional impact of policies and reforms provided an overview of the IMF's analytical and policy work on inequality and its operationalization in country work.

3.LOG-FRAME OUTPUTS

This research project has four main output categories:

1) Produce high quality, policy-relevant research on macroeconomic issues affecting LICs
2) Promote and increase the usage of IMF research products generated under this project by IMF country teams and partner authorities
3) Strengthen engagement by senior IMF policymakers on issues affecting LICs
4) Strengthen capacity-building by expanding the network of LIC researchers

Table 2 provides a summary of the research outputs for the ten years of this project. We have met, and in most cases exceeded, the high target for all outputs for year 10 (FY2022) of the programme except for three outputs, where one is above the low target, one meets the medium target, and one exceeds the medium target. It is important to note that many of the targets were met even in a context of the ongoing COVID-19 pandemic with all its disturbances. In other words, the project remains on track on its deliverables despite the very challenging COVID-19 context.

The targets were revised in February 2022 to reflect the rephasing of the project funding. There were also historical revisions in the number of produced outputs for output indicators 1.1 and 1.2 before Phase 4, resulting in an increase in the stock of these outputs at the end of Phase 3. The targets were revised upward accordingly, to keep the targets during Phase 4 unchanged. The log-frame was also streamlined (see a footnote in Appendix I).

Table 2. Summary of Research Outputs

Type of Output	Year 1 Outputs FY2013	Year 2 Outputs FY2014	Year 3 Outputs FY2015	Year 4 Outputs FY2016	Year 5 Outputs FY2017	Year 6 Outputs FY2018	Year 7 Outputs FY2019	Year 8 Outputs FY2020	Year 9 Outputs FY2021	Year 10 Outputs FY2022	Total	**Revised Targets**
Working Papers (1.1)	13	17	10	16	20*	18*	20*	16	21	24	175	H 167 M 160 L 155
Published Papers (1.2)	2*	6	8*	9*	15*	10*	12*	15*	13	9	99	H 99 M 95 L 91
Uptake by IMF Teams (2.1)	9	12	13	14	16	21	13	17	14	14	143	H 142 M 138 L 134
Of which: Courses Offered to IMF Staff (2.1.a)	.	.	.	.	.	.	.	.	3	5	8	H 7 M 6 L 5
Uptake by Authorities (2.2)	1	2	4	2	7	13	9	8	8	6	60	H 57 M 56 L 55
Of which: Courses Offered to Authorities (2.2.a)	.	.	.	.	.	9	7	4	5	5	30	H 28 M 26 L 25
High-level Policy Conferences (3.1)	6	4	2	1	9	8	6	4	2	8	50	H 48 M 46 L 44
Results Reflected in IMF Board Discussions and Papers (3.2)	4	4	3	2	6	10	7	5	8	6	55	H 53 M 52 L 50
Of which: Results Reflected in IMF Policy Papers (3.2.a)	3	3	2	1	2	5	2	2	2	2	24	H 27 M 25 L 23
Commissioned Papers (4.1)	0	13	0	0	7	5	1	4	2	2	34	H 35 M 33 L 32
Toolkits (4.2)	0	0	1	1	3	2	2	0	2	2	13	H 14 M 13 L 11
External Researchers at High-level Policy Conferences (4.3)	6	5	5	15	20	35	22	16	15	16	155	H 152 M 148 L 144
Thematic Areas of IMF Policy Influenced and Made LIC-specific (1)	3	2	0	0	3	2	1	1	4	2	18	H 18 M 17 L 16

Source: IMF staff reporting.
Notes: The targets were revised in February 2022 to reflect the re-phasing of the project funding. The targets were further revised upward to keep the targets during Phase 4 unchanged while reflecting historical revisions in the number of produced outputs before the beginning of Phase 4, resulting in an increase in the stock of outputs at the end of Phase 3 from 129 to 130 for output 1.1 and from 70 to 77 for output 1.2. Superscript * indicates the historical revisions. The log-frame was revised accordingly. It was also streamlined (see a footnote in Appendix I).

Log-frame Outputs

Output 1: Produce high quality, policy relevant research on macroeconomic issues affecting LICs

This year our team produced 24 working papers (including 14 book chapters, two of which are commissioned papers) and published 9 papers on peer-reviewed journals.

Output 1.1 – Working Papers

Topic 1. Modelling and understanding policy choices

1. Departmental Paper: Taking Stock of IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems
2. The Distributional Implications of the Impact of Fuel Price Increases on Inflation

Topic 2. Understanding macro-financial linkages

3. Defying the Odds: Remittances During the COVID-19 Pandemic
4. The S-curve: Understanding the Dynamics of Worldwide Financial Liberalization
5. The World Uncertainty Index

Topic 3. Building resilience

6. Global Climate Change Mitigation, Fossil-Fuel Driven Development, and the Role of Financial and Technology Transfers: A Simple Framework
7. How do Climate Shocks Affect the Impact of FDI, ODA and Remittances on Economic Growth?

Topic 4. Promoting structural change and institutional development

8. Macro-Fiscal Gains from Anticorruption Reforms in the Republic of Congo [Chapter 6 of Good Governance in Sub-Saharan Africa]

Topic 5. Enhancing inclusion

9. Intergenerational Social Mobility in Africa Since 1920
10. The Close Relationship between Informality and Gender Gaps in Sub-Saharan Africa [Chapter 7 of The Global Informal Workforce: Priorities for Inclusive Growth]
11. Epidemics, Gender, and Human Capital in Developing Countries
12. Loss-of-Learning and the Post-Covid Recovery in Low-Income Countries
13. Links Between Growth, Inequality, and Poverty [Chapter 2 of How to Achieve Inclusive Growth]
14. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth, Commissioned]
15. Financial Inclusion [Chapter 4 of How to Achieve Inclusive Growth]
16. Technological Progress and Artificial Intelligence [Chapter 5 of How to Achieve Inclusive Growth]
17. Competition and Innovation [Chapter 6 of How to Achieve Inclusive Growth]
18. Trade [Chapter 7 of How to Achieve Inclusive Growth]
19. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth, Commissioned]
20. Tax Policy [Chapter 12 of How to Achieve Inclusive Growth]
21. Public Expenditure [Chapter 13 of How to Achieve Inclusive Growth]
22. Education and Health [Chapter 14 of How to Achieve Inclusive Growth]
23. Sharing Resource Wealth and Addressing Fragility [Chapter 19 of How to Achieve Inclusive Growth]
24. Climate Change [Chapter 20 of How to Achieve Inclusive Growth]

Working papers produced before Phase 4 (for the record)

1. Twin Deficits in Developing Economies [published in July 2018]

Output 1.2 – Published Papers

Topic 1. Modelling and understanding policy choices

1. Building back better: How big are green spending multipliers?
   Ecological Economics
2. The distributional implications of the impact of fuel price increases on inflation
   Energy Economics

Topic 2. Understanding macro-financial linkages

3. The welfare implications of exchange rate choices in developing agricultural economies
   Journal of Macroeconomics

Topic 3. Building resilience

4. Trends and cycles in CO2 emissions and incomes: Cross-country evidence on decoupling
   Journal of Macroeconomics

Topic 4. Promoting structural change and institutional development

5. Will the AI revolution cause a great divergence?
   Journal of Monetary Economics
6. Growth-equity trade-offs in structural reforms
   Scottish Journal of Political Economy
7. The role of productivity, transportation costs, and barriers to intersectoral mobility in structural transformation
   Economic Modelling

Topic 5. Enhancing inclusion

8. The Distributional Effects of Government Spending Shocks in Developing Economies
   Review of Development Economics
9. Serving the Underserved: Microcredit As a Pathway to Commercial Banks
   The Review of Economics and Statistics

Published papers produced before Phase 4 (for the record)

1. Financial intermediation costs in low income countries: The role of regulatory, institutional, and macroeconomic factors [published in March 2013]
   Economic Systems
2. Investment scaling up and the role of government [published in February 2016]
   Applied Economics
3. The Finance and Growth Nexus Re-Examined: Do All Countries Benefit Equally? [published in February 2016]
   Journal of Banking and Financial Economics
4. Implications of food subsistence for monetary policy and inflation [published in July 2016]
   Oxford Economic Papers
5. Harnessing Resource Wealth for Inclusive Growth in Fragile Western African States [published in March 2017]
   Journal of African Economies
6. Government spending effects in low-income countries [published in July 2018]
   Journal of Development Economics
7. The Monetary Transmission Mechanism in the Tropics: A Case Study Approach [published in June 2019]
   Journal of African Economies

Output 2: IMF research product produced under this project used by IMF country teams and partner authorities

This year there are 14 uptakes by IMF country teams, including 5 courses offered to IMF staff, and 6 uptakes by country authorities, including 5 courses offered to country authorities (of which two are online courses that were open to both IMF staff and country authorities).

Output 2.1 – Country Applications with IMF Country Teams

FPAS framework - no publication under this topic this year.

Diversification - no publication under this topic this year.

DIG/Investment scaling up/Debt sustainability

1. Box 2: Estimating Reform Gains (application of DIGNAR-19 model to Uganda, Article IV)
2. Application of DIGNAR-19 model to Guinea (Article IV)
3. Application of DIGNAR-19 model to The Gambia (Selected Issues)
4. Application of DIGNAR-19 model to Madagascar (Extended Credit Facility)

Natural disasters/DIGNAD

5. Application of DIGNAD model to Solomon Islands (Selected Issues)
6. Samoa: Technical Assistance Report—Climate Macroeconomic Assessment Program (CMAP)
7. Selected Issues Paper: Enhancing Resilience to Climate Change (DIGNAD model application for Uganda)
8. Selected Issues Paper: Building Resilience to Natural Disasters: Growth and Income Distribution Implications of Alternative Government Financing Instruments (Dominica)

Income and Gender Inequality

9. Selected Issues Paper: Towards More Gender Equality in Kenya

Other - no publication under this topic this year.

Output 2.1.a – Courses Offered to IMF staff

10. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)
11. Course: Macro-Structural Training: Distributional Impact of Policies and Reforms
12. Course: Clinic on Diversification, Structural Transformation, and Reforms in Developing Economies
13. Course: Clinic on Labor and Product Market Reforms
14. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

Output 2.2 – Uptake by Country Authorities

1. FPAS Assistance to Ghana (Virtual Technical Assistance)

Output 2.2.a – Courses Offered to Country Authorities

2. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)
3. Presentation to Authorities: Enhancing Resilience to Climate Change in the Maldives
4. Course: DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemic in Emerging and Developing Countries at IMF CCAMTAC
5. Course: Gender equality and macroeconomics (in collaboration with the African Training Institute (ATI) and UN Women) to African country authorities

6. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

Output 3: IMF strengthens engagement by senior IMF policymakers on issues affecting LICs

This year our team held and contributed to 8 high-level policy conferences, involving IMF senior staff. The team also contributed to 6 outputs that were discussed at the IMF Executive Board, two of which were IMF Policy Papers.

Output 3.1 – High-level Policy Conferences Attended by IMF Senior Staff

1. Climate-Related Natural Disasters—Macroeconomic Effects and Policy Responses
2. Supporting Food Security in Sub Saharan Africa Amid the COVID Pandemic and Climate Change
3. COVID-19 and Fragile States: Promoting Resilient Recovery for the Most Vulnerable Communities
4. Macroeconomic Fragile States post COVID-19: What Stabilization Policies?
5. How to Achieve Inclusive Growth
6. Presentation of "EAC: Challenges to Monetary Policy Space and Transmission" at a seminar during the 2021 Annual Meetings, "Meeting with EAC Ministers of Finance and Central Bank Governors"
7. IMF-FSB joint Early Warning Exercise: Potential Loss from Human Capital Scarring Due to the Pandemic
8. Supporting Fragile and Conflict-Affected States: The IMF FCS Strategy

Output 3.2 – Results of Research Reflected in IMF Board Discussions and Papers

Fiscal Monitor/WEO/REO/SDN/Board Presentations

1. October 2021 WEO Box 2.1: Food Insecurity and Prices during COVID-19
2. Staff Climate Note on Macro-Fiscal Implications of Adaptation to Climate Change (joint with FAD)
3. Board Presentation: The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work
4. October 2021 MCD REO: A fragile recovery continues in the Middle East and Central Asia region

Output 3.2.a – Results of Research Reflected in IMF Policy Papers

Policy Papers discussed by the IMF Executive Board

5. Box in Board Paper. Reaching the Pre-COVID Convergence Path Through the Lens of a Dynamic General Equilibrium Macroeconomic Model [in Macroeconomic Developments and Prospects In Low-Income Countries—2021]
6. Section in Board Paper: The International Monetary Fund's Strategy in Fragile and Conflict-Affected States (FCS)

Output 4: IMF strengthens capacity building by expanding the network of LIC researchers

This year there are two commissioned papers (which are book chapters), which are also counted toward Output 1.1 (as was done in reporting in previous years). Our team also produced two toolkits and made 16 presentations at high-level policy conferences.

Output 4.1 – Commissioned Papers

1. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]
2. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]

Output 4.2 – Toolkits

1. DIGNAD

2. IAPOC Toolkit – An Assessment Toolkit for Monetary Policy Frameworks

Output 4.3 – Attendance of External Researchers at High-Level Policy Conferences

This year our team offered 16 presentations at high-level policy conferences (see Appendix 3 for further details).

Outcome Indicator 1 – Thematic areas of IMF policy influenced and made LIC-specific

1. Food insecurity and food inflation—see the paragraph in Section 2 for detail.
2. Climate change and debt sustainability—see the paragraph in Section 2 for detail.

<u>Other Outputs</u>

E-newsletters

1. June 2021 Newsletter
2. September 2021 Newsletter
3. December 2021 Newsletter
4. March 2022 Newsletter

Blogs/Article/Press/Other

1. IMF Blog: Fragile and Conflict-Affected Economies Are Falling Further Behind
2. VOXEU Blog: Defying the odds: Remittances held up during the COVID-19 pandemic
3. VOXEU: Blog Investigating the Drivers of Remittance Fees
4. GlobalDev Blog: Public investment for growth: a country's absorptive capacity is key
5. IMF Podcast: Island States Paying Price for Climate Change
6. F&D: Intergenerational Social Mobility in Africa
7. DIGNAR-19 Toolkit Manual
8. Note: "Spillovers from the War in Ukraine to Low-income Countries" (bilaterally shared with FCDO)
9. Internal daily newsletters: "Headlines on LICs"

The team also offered 4 internal (Fund-wide or cross-Departmental) presentations (see Appendix 3 for further details).

4. OUTPUTS: ADDITIONAL INFORMATION

Nothing more to report at this time.

5. UPTAKE/ENGAGEMENT WITH BENEFICIARIES

By design, this project continually aims to produce high quality research that is applicable to LICs and usable by country authorities, academics, and IMF staff. Each output captured in the log-frame reflects this overarching goal. Sections 2, 3, and 6 of this report address our uptake and engagement with beneficiaries in greater detail.

6. OUTCOMES AND IMPACTS

Research outcomes from the MRLIC project are public goods and have continued receiving high praises. There has been a tremendous uptake of the MRLIC outcomes, with a wide range of research findings discussed at the IMF Executive Board, featured in many Article IV reports and flagship reports (WEO, REO), and various policy papers. Country applications have facilitated policy dialogue and well-designed courses have helped strengthen the capacity of country authorities. Many of our research papers were published in highly quoted academic journals, speaking to the scientific value of our outcomes among academics, and featured in other communication outlets that can reach broader audience. These outcomes have a critical impact on the IMF staff work, the Fund's engagement with country authorities, academics, and all other audiences that have been beneficiaries of our courses, conferences, and publications.

Praising the FCDO-IMF partnership, the Senior Advisor on Gender in the Office of the Managing Director, **Ratna Sahay**, who is leading the IMF-wide working group on gender issues, noted "The war in Ukraine added to the challenges from the COVID-19 crisis pandemic, triggering labor markets and supply chain disruptions, energy and food price spikes, and worsening food insecurity. These developments are most critical in low-income countries and most likely to affect women's lives most severely. The IMF-FCDO partnership has been instrumental in developing a better understanding of policies that can help close macro-critical gender gaps. These policies are crucial to improving living standards of vulnerable groups and have a huge potential to enhance social and macroeconomic stability. Going forward, with collaboration being one of the four pillars of the proposed IMF gender mainstreaming strategy, the IMF-FCDO partnership will continue to play a pivotal role in operational and capacity development work in this area."

In the same vein, **Chris Adam**, Professor of Development Economics, University of Oxford; Visiting Scholar at the IMF, said "Closing the large infrastructure gap in developing countries is critical for a sustainable economic and social development. In particular with climate challenges, scaling up resilient investment that account for the vulnerability to natural disasters is important for the present and future generations. Through its partnership with FCDO, the IMF has worked to provide timely and data-driven policy advice to strengthen resilience while safeguarding debt sustainability. The various toolkits developed by staff under the program have been highly useful for country applications."

Our work program on monetary policy in LICs has continued to develop through close engagements with country authorities and IMF teams on LICs. Operationally, we continue to support members to build capacity on FPAS. Like last year, the team has continued to work closely with the Bank of Ghana (BoG) in strengthening analytical capacity, FPAS processes, and organization. There is a forthcoming toolkit to provide input to monetary policy models and other policymaking by producing nowcast of quarterly GDP growth, even for the countries without official quarterly GDP statistics, in collaboration with the IMF African Department. Its preliminary version was presented to the African Department and bilaterally discussed with the country desks for Comoros, Republic of Congo, Uganda, and Sierra Leone.

Various courses are helping country authorities in their operational work. The online courses developed on the DIG model family continued to serve various audiences. These are unique opportunities for staff and country authorities to equip themselves with skills for effectively implementing model-driven policy evaluations. Webinars and courses delivered by the MRLIC have generally received praises from participants with an outstanding level of satisfaction. The online course on Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx) was a great success. In the last run of the course, 146 participants joined online, of which more than 20 percent were government officials. About half of active participants were from low or lower middle-income countries, and more than half of government officials were from sub-Saharan Africa. The pass rate among active participants was 60 percent for the general public and 81 percent for government officials, reflecting a high level of engagement. The macro-structural course on the Distributional Impact of Policies and Reforms received 38 participants. The course to country authorities on Gender Equality and Macroeconomics had 45 participants, with more than 40 coming from LICs. The webinar on DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemic in Emerging and Developing Countries, presented by the MRLIC team to country authorities at the IMF CCAMTAC (The Caucasus, Central Asia, and Mongolia Regional Capacity Development Center), had participants from 13 countries (including 5 LICs). The evaluation ratings by participants of these courses were very high at 4.6 (out of 5) on average.

Despite travel restrictions, the team has attended, both virtually and in-person, many international conferences and seminars organized by various international institutions such as the World Food Programme (WFP), the National Bureau of Economic Research (NBER), Allied Social Science Associations (ASSA), Bank for International Settlements (BIS), Oxford Center for the Study of African Economies (CSAE), Society for Economic Dynamics (SED), and Southern Economic Association, as well as IMF's regional capacity development centers in Africa (African Regional Technical Assistance Centre, AFRITAC; Africa Training Institute, ATI). These represented opportunities for staff to showcase their research, share knowledge, and engage in follow-up discussions with other academics and practitioners, which is critical to open new research avenues.

The analyses produced by the MRLIC have been prominently featured at high-level policy events that offered forums to discuss key issues that LICs face. The high-level conferences on important topics (climate-related natural disasters, food insecurity, fragile and conflict-affected states) were attended by IMF Management and external high-level senior officials (prime minister, finance ministers, management-level officials of international organizations). The MRLIC's outcomes were also highly visible during the October 2021 World Bank-IMF Annual Meetings. For example, a confidential Early Warning Exercise presented to the International Monetary and Financial Committee (IMFC) included the MRLIC team's analysis on the potential scarring effects from human capital formation interruptions due to the pandemic, which contributed to gathering a strong support for LICs from the international community. Another event that launched the book "How to Achieve Inclusive Growth" was widely attended and streamed live in social media. All these conferences and events widely reached international audience from diverse background, including country authorities, representatives of civil societies, and researchers from academia.

As the work progresses on relevant topics such as COVID-19 and its related consequences, climate change, inclusion, digitalization, monetary policy frameworks, and food insecurity, the impact of the FCDO-IMF partnership is undoubtably invaluable in supporting and informing policy making across LICs. The MRLIC has been very impactful by leveraging on a unique platform of collaboration for researchers and policymakers in LICs. It has continued to deliver compelling research-driven policy tools to support LICs as these countries move toward the 2030 SDGs.

7. COSTS, VALUE FOR MONEY, AND MANAGEMENT

The approved budget for the project is US$29.5 million.[7]

Appendix 2 provides the project's formal financial reporting, generated by the IMF's accounting system. As of April 2022, $23.7 million has been drawn from the subaccount. These figures reflect a lag of actual expenses of approximately two to three months to enable the requisite verification of expenses before they are charged to donor subaccounts.

The following table provides an indicative breakdown of spending over 10 years of the project. We do not foresee any changes in cost structures due to exchange rates.

Table 3. Project Expenditures in Years 1-10

Activity	Years 1-10, Cumulative
HQ led missions including entire mission team	$6,823,847
Research HQ based / Visiting Scholars; Short-term Advisors; Development of CD tools; Development of general CD technical materials; Development of training courses or other learning materials	$9,585,719
Seminars & Study Tours; Interactive learning and workshops	$1,697,718
Project Backstopping	$3,173,599
Project Management	$283,308
Exceptional Expenses	$550,638
Language Services	$2,170
Trust Fund Fee	$1,548,190
Total	**$23,665,189**

Source: Appendix 2.
Note: Activity items are consolidated.

<u>Value for Money:</u>

This project remains highly cost effective, owing to solid governance of the procurement process and the high-quality work by the team. The team strictly follows all Fund guidelines for hiring, travel, and conferences. All contractual employees undergo a competitive process before being hired. Outputs are produced within strict timeframes and must meet Fund requirements for publication. The quality of our papers is further assessed when they are submitted to peer-reviewed publications.

The average cost per paper is lower than the FCDO benchmark of $183,000 (£150,000) per paper.[8] Table 4 shows that the cost per working paper for the 10 years is approximately $70,000 (£58,000), compared to about $77,000 (£55,000) last year and that the cost per published paper is about $124,000 (£102,000), compared to about $129,000 (£92,000) last year (after a technical correction

[7] This is based on $23.3 million up to Phase 3 plus $6.2 million of Phase 4 (which is equivalent to £5.1 million based on the exchange rate as of May 13, 2022).

[8] The currency conversion is based on the exchange rate as of May 13, 2022 (U.K. £1 = U.S. $1.21995). The FCDO benchmark cost per paper is £150,000, while its value in U.S. dollars is subject to exchange rate fluctuations.

on the estimates reported last year).[9] These costs decreased in U.S. dollars while they slightly increased in U.K. pounds due to exchange rate fluctuations, although the costs compare favorably with the FCDO benchmark.[10] The cost estimates are based only on the funds provided by the FCDO, therefore indicating a cost-benefit balance from the perspective of the FCDO.[11] We estimate that staff, contractual employees, and visiting scholars spend 75 percent of their time on research papers, while the remaining 25 percent is devoted to country applications work.[12] The total staff, contractual, and visiting scholar cost is thus split between papers and applications.

The quality of the project outputs is very high despite the low average cost. The total number of publications reached 94 over the 10 years. The full list of the publications is available at the project's website (in an excel file under "Outputs" in the middle of the left-side menu section). As noted in a dedicated paragraph in the Progress and Achievements part of Section 2, the papers are published on high-ranked journals and are well cited by external researchers. Our products are also featured in programs of prestigious conferences as noted in Section 6. Strong uptakes by country authorities and IMF country teams also demonstrate the high relevance and usefulness of the project's outcomes in practical policymaking.

Table 4. Cost per Working and Published Paper during Years 1-10

Total Staff/Contractual/VS Costs[1]	$16,409,566
Research Paper Costs	$12,307,175
Country Applications Costs	$4,102,392
Working Papers[2]	175
Cost Per Working Paper	$70,327
Published Papers[2]	99
Cost per Published Paper	$124,315

[1] Estimated as the sum of the first two lines of Table 3. Note that the first line of Table 3 includes both IMF staff salary and travel expenses. Thus, the estimates we have calculated for working and published paper costs likely overestimate the true cost of research time.
[2] These include commissioned papers.

Direct project management costs represent approximately one percent of our total budget. If we include the Trust Fund management fee, program management costs will be about eight percent. This means that most of the funds available to this project have been spent on producing high quality research.

[9] The cost estimates reported in previous few years were inaccurate by counting commissioned papers twice, inadvertently. Also, there were historical revisions to the number of papers produced during Phases 1, 2, and 3. As a result, the number of papers produced until the last year decreases from 176 to 151 for working papers but coincidentally remains the same at 90 for published papers. Therefore, the corrected cost estimates for the last year are $76,729 for working papers and $128,735 for published papers, only the former of which is higher than reported last year (i.e., $65,830 for working papers).

[10] The exchange rate used in the last year's report was as of May 13, 2021 (U.K. £1 = U.S. $1.402300), leading to higher costs in U.K. pound by 15 percent even with no change in costs in U.S. dollars.

[11] It is conceptually complicated to reflect the new co-financing structure with the CCCDI in this cost estimation, not only because some papers produced under the CCCDI-funded activities were not counted as papers produced under the MRLIC, but also because the inclusion of more funding from other partners would lead to higher estimated costs even when there was no cost implication to the FCDO, if all other factors were kept unchanged.

[12] The total research staff costs are estimated as the sum of the first two lines of Table 3. Note that the first line of Table 3 includes both IMF staff salary and travel expenses. Thus, the estimates we have calculated for working and published paper costs likely overestimate the true cost of research time.

8. WORK PLAN AND TIMETABLE

Just as the world was emerging from the COVID-19 pandemic on a weak footing, the war in Ukraine along with climate change and other localized crises (e.g., insecurity in the Middle East and the Sahel) weighed on the economic recovery. These challenges cloud the socio-economic outlook in LICs. The FCDO-IMF partnership will keep the momentum and work actively on core and emerging research topics to inform timely policy actions needed to address key macroeconomic challenges in the poorest countries. As infections abate, we expect health conditions to improve and allow for more in-person missions throughout the fiscal year 2023.

Individual work plans

The following provides a brief overview of our plans for each topic. Some of these products will be co-funded by the CCCDI as mentioned in Section 2.

(1) COVID-19

Modeling policy choices: Public debt vulnerabilities in LICs:

a) The team will work on a paper where DIG-Labor-COVID-19 adds a tourism sector, public investment in health and education, and shocks to productivity to the DIG framework to track the paths of growth, inequality, unemployment, and public debt associated with the COVID-19 shock.

Supply chain disruptions:

b) A working paper will use granular France customs data to investigate propagation of the COVID-19 shock along the supply chains in 2020. It will quantify the effect of the COVID-19 shock on trade adjustment and identify mitigating and amplifying factors contributing to heterogeneous adjustment paths among French firms. Factors considered this paper include the degree of automation and whether the products are upstream or downstream, both of which have implications to LICs. Exploiting bilateral data will allow to assess whether adjustments to the COVID-19 shock occurred predominantly along the intensive margin (reduction of trade volumes) or the extensive margin (exits from import-export markets), in particular in LIDCs. The results from this paper will be presented in the June 2022 Western Economic Association Annual Meetings.

Enhancing inclusion: Income inequality:

c) The team will produce a box and two online analytical annexes in the Fiscal Monitor to analyze social protection and poverty during and after pandemic.
d) Staff will work on a paper on the post-COVID-19 income divergence across regions countries, providing an assessment and policy implications using WEO data and projections.
e) There will be a paper that investigates inequality and poverty in India during the COVID-19 pandemic.

Working from home in low-income and developing economies:

f) Staff will use online survey data in 10 selected developing economies including a low-income country, Vietnam, to produce a paper on the developments and prospects of working from home in developing economies before and during the pandemic. A new toolkit is planned to be developed based on this unique dataset.

(2) Modelling policy choices

Public debt vulnerabilities in LICs—new debt composition, new challenges:

a) The team will produce a staff discussion note on structural reforms and public debt in low-income and developing economies.

Monetary policy frameworks in LICs:

b) There will be a high-level policy conference on "Monetary Policy Frameworks: An Index and New Evidence," featuring the IAPOC Toolkit. Also, in collaboration with iLab, the team will organize an internal event to launch the IAPOC Toolkit, which provides a comprehensive assessment of monetary policy frameworks. The IAPOC Toolkit will help IMF staff better understand the different dimensions of monetary policy frameworks in many countries worldwide and conduct finer yet robust empirical analysis.
c) There will be a paper to develop a continuous time heterogenous agent model to analyze inequality and poverty under different monetary, exchange rate, and fiscal policies, with features of LICs such as a small open economy, an incomplete financial market, and a subsistence constraint on food consumption.

(3) Understanding macro-financial linkages

Digitalization and financial links:

a) There will be a book chapter examining the economic and financial links between China and Africa.
b) There will be a paper on central bank digital currencies (CBDCs) in LIDCs, investigating its desirability, macroeconomic implications, and related policy choices. The project's main goal is to develop and implement a heterogeneous agent model to analyze the impact of CBDCs in LIDCs. Specifically, the paper will assess if the financial inclusion benefits of adopting a CBDC outweigh the costs of implied financial stability risks, in particular, the disintermediation of the banking system. The findings of model will be discussed along with a survey on a potential adoption of CBDCs in LIDCs and concrete policy recommendations to offset unintended negative impacts. The team will also develop a toolkit to help LIDCs assess if the adoption of a CBDC would be beneficial to their economies.

An investigation into the cost of remittances:

c) There will be a paper using panel data across 365 corridors to analyze time and country variations in remittance fees as well as driving factors.
d) There will be a paper using quarterly data to examine how transaction costs influence remittances.

(4) Building resilience

Macro criticality of climate-change-related natural disaster shocks:

a) Staff will apply the DIGNAD model to Bangladesh, Timor-Leste, and Madagascar.
b) Staff will produce Article IV analytical work on climate change in Niger.
c) In collaboration with the African Training Institute (ATI), the MRLIC team will offer a course on macroeconomics of climate change. The course will present an overview of the Debt-Investment-Growth and Natural Disasters (DIGNAD) model of resilience to natural disasters, an example application to a disaster-prone country, and policy trade-offs to bolster climate resilience. Country officials from a wide range of African countries are expected to attend this course.
d) Staff will produce a box in the External Sector Report (ESR) on the external sector impacts of natural disaster shocks.
e) Staff will develop a toolkit that allows for joint adaptation and mitigation policy analysis based on a macroeconomic model for slow-moving climate risks. A working paper describing the model, its findings, and toolkit applications will be published.
f) There will be a paper on climate and inequality using a heterogeneous-agent DSGE framework.
g) Staff will develop an excel-based user-friendly interface of the DIGNAD toolkit for the Climate Macroeconomic Assessment Program (CMAP).
h) There will be a paper on climate change and domestic debt cost. The paper will use a panel data set of sovereign borrowing by developing countries from 1980 aims to fill the void in existing studies that have focused only on foreign debts.
i) Another paper will assess the nexus between climate change, demographic divergence, and the macroeconomy. It will combine climate and demography in a macro-model to study how interest rates behave under different climate change and demographics scenarios.
j) There will also be a paper on investing in resilience building in Dominica.

Macroeconomic developments and prospects in LICs:

k) The MRLIC team will contribute to an IMF Policy Paper on macroeconomic developments and prospects in LICs.

(5) Promoting structural change and institutional development

Economic challenges in LICs:

a) There will be a high-level conference on LICs during the 2022 IMF-World Bank Annual Meetings. The event will present policy issues in LICs and the years of successful FCDO-IMF partnership.
b) There will be a high-level conference on “Fragility, Conflict, and Macroeconomic Policy in a Shock-Prone World.”
c) The IMF-FCDO team will co-organize a high-level international conference on development economics (2022 International Conference on Development Economics) in partnership with the French Association on Development Economics. The event, hosted by the CERDI (Centre d'Études et de Recherches sur le Développement International–Clermont-Auvergne University, France) from June 30 to July 1st in Clermont-Ferrand (France), will bring together top academics and policymakers to discuss about the latest research on migration, climate change, growth, poverty, monetary policy, international trade, inequality, and fiscal policy.
d) The team will work on a paper (i) presenting a simple framework to build poverty projections based on macroeconomic indicators and (ii) assessing to what extent these poverty projections relate to the provision of social protection.
e) There will be a paper on structural transformation and labor mobility over the life cycle.

f) The MRLIC team will also work on a paper analyzing worker mobility and domestic production networks. A presentation of the preliminary results from this work will be given in an event at the Central Bank of Ireland in May 2022.

Food insecurity in LICs:

g) There will be a paper modeling food insecurity in LICs. The paper will build a spatial multi-sector open economy model to explore policies that could be most effective toward addressing the climate change-driven intensification of food insecurity in LICs amid serious financial and capacity constraints.
h) There will be a paper providing an empirical assessment on staple food prices in sub-Saharan Africa, a region where food insecurity is pervasive. The paper will analyze the domestic and external drivers of the real costs of staple foods in local markets in sub-Saharan Africa and explore the policy implications.
i) Drawing from the team's modeling and empirical work, an interdepartmental paper on climate change and food insecurity in sub-Saharan Africa will be published. This paper will chart policy pathways to address the adverse spillovers from climate change, the COVID-19 pandemic, and the war in Ukraine that are intensifying already acute food insecurity in sub-Saharan Africa.

Diversification and rethink of development policy:

j) The team will develop a toolkit on quarterly GDP nowcasting. Based on that toolkit, staff will also publish a working paper presenting a panel nowcasting method for countries that do not publish quarterly GDP, a majority of which are LICs.
k) Another paper will analyze network bottlenecks and market power.

(6) Enhancing inclusion

Gender equality and sustainable growth:

a) There will be a paper on gender inclusion in Kenya.
b) Staff will contribute on a book chapter on gender gaps in MENA labor markets.
c) The team will work on a paper on legal barriers to women's labor force participation. Using a 50-year panel of gendered laws in 190 countries from the World Bank's Women, Business and the Law database, this project will offer a granular and global assessment of the relationship between gender discrimination by the law and women's outcomes in the labor market.
d) There will be a paper providing a gender analysis on climate change adaptation and farm household productivity. This work will use survey data from Togo.
e) Staff will write a paper on digitalization and perception on women leadership in Africa. Based on individual survey data from more than thirty African economies, the research will assess whether exposition to internet access affect perceptions on women as good leaders.
f) There will be a paper using survey data to conduct an analysis on gender and central banking.

9. RISK

The reduction in the project's annual funding amount has posed significant challenges, notably in responding to the new policy issues LICs are facing, amid the pandemic and the war in Ukraine. A risk that this partnership could face is further budget cuts or delays in disbursements relative to the current Letter of Understanding. Additional funding cuts will undoubtedly undermine the quality and quantity of delivery given that it will be more difficult for the team to hire competitive contractuals and visiting scholars, and respond to the growing demand for support the project is facing. Scope to find alternative sources of funding is highly uncertain, notably because the CCCDI envelope used to support the program this year is only temporary.

10. MONITORING AND EVALUATION

Monitoring

IMF reports to FCDO annually regarding the outputs included in the log-frame. In addition to this formal reporting requirement, we provide quarterly updates to our website so that FCDO and the public in general have up-to-date information on our research and progress. The team sends out quarterly e-newsletters that reach an audience of more than 1500 academics, policymakers, central bank staff, and government representatives, among others. These e-newsletters are posted on the project website. We also upload all publicly available working and published papers to the R4D portal on the FCDO website so that FCDO staff members can easily search and retrieve our outputs. To further ensure public access to all outputs produced through the grant, we provide “gold access” to journal publications. When deemed necessary by the IMF and FCDO project members, we conduct video conference calls to discuss the project.

Evaluation

While FCDO conducts a yearly evaluation of the program, no budget for an external evaluation was included in the project budget.

11. FURTHER INFORMATION

Nothing to add at this time.

APPENDIX 1. LOG-FRAME

The log-frame was revised in February 2022 to reflect the rephasing of the project funding, as well as historical revisions for Phases 1-3. It was also streamlined (see the notes at the bottom of the table). The log-frame was extended to March 2025, keeping the same pace of producing outputs, assuming that a similar level of funding would be available for each year. This means that reduced annual amounts from the FCDO are assumed to be complemented by any other funding sources (e.g., CCCDI in the case of FY2022). Therefore, the log-frame is subject to change, depending on the funding situation.

PROJECT NAME	**Macroeconomic Research in Low-Income Countries (LICs)**								
IMPACT	**Impact Indicator 1**		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	
Better macroeconomic policymaking in LICs leading to faster economic growth, job creation and poverty reduction.	Proportion of people living in extreme poverty in LICs	**Planned**	(2018) MRLIC countries: 28.5%						
		Achieved							
		Source							
		World Bank, Poverty and Equality dataset, Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population), Simple average of MRLIC countries (Table 1 of Annual Report).							
	Impact Indicator 2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	
	Economic growth rates in LICs	**Planned**	(2019) MRLIC countries: 4.0%						
		Achieved							
		Source							
		IMF WEO data, Real GDP growth, Annual percent change, Simple average of MRLIC countries (Table 1 of Annual Report).							
OUTCOME	**Outcome Indicator 1**		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
Better engagement by IMF policy-makers on LIC-specific macroeconomic issues, leading to improved policy-making in specific project thematic areas.	Evidence of Improved IMF policymaking and **integration of LIC-specifics in project thematic areas**.	**Planned**	March 2020 (12)	By March 2021: H (16) M (14) L (12)	By March 2022: H (18) M (16) L (14)	By March 2023: H (20) M (18) L (16)	By March 2024: H (22) M (20) L (18)	By March 2025: H (24) M (22) L (20)	Specific context: the average per year (Yr 1 - 8) is 2. So medium case is 2 per year. High case 2 additional, low case 2 fewer.
		Achieved		16	18				
		Source							
		IMF Reporting - board papers, policy papers, conference reports/papers, pilot applications of country teams, refs in staff docs, or internal policy memos.							
INPUTS (£)	**FCDO (£)**	**Govt (£)**	**Other (£)**	**Total (£)**				**FCDO SHARE (%)**	**Memorandum**
	£5.1 million		**£1.0 million**	**£6.1 million**				84	"Other" is USD 1.2 million for FY2022 from the IMF's COVID-19 Crisis Capacity Development Initiative (CCCDI), which is an external funding vehicle (with U.K. £1 = USD 1.219950, as of May 13, 2022). "Other" does not include the cost-sharing from the IMF's internal budget. The outputs of the CCCDI-funded project are counted towards the output targets for the MRLIC, only when the outputs are assessed to be within the aims and scope of the MRLIC. The log-frame assumes a similar annual funding amount for each year (Yr 10 - 13), which is subject to change going forward.

OUTPUT 1	Output Indicator 1.1		Baseline	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Target (March 2025)	Assumptions
High quality, policy relevant research on macroeconomic issues affecting LICs produced.	Number of **priority research papers** produced, on the **five research themes of the MRLIC** (see Assumptions)	**Planned**	March 2020 (130)	By March 2021: H (151 papers) M (146 papers) L (141 papers)	By March 2022: H (167 papers) M (160 papers) L (155 papers)	By March 2023: H (196 papers) M (191 papers) L (186 papers)	By March 2024: H (212 papers) M (207 papers) L (202 papers)	By March 2025: H (228 papers) M (223 papers) L (218 papers)	**Specific context**: the average output per year (Yr 1 - 8) is 16. So medium case is 16 per year. High case 5 additional, low case 5 fewer. **High-level context**: 1) No major global challenge was initially assumed, such that IMF staff can devote time to the project as committed, but two global shocks (COVID-19 pandemic, war in Ukraine) required adjustments. 2) IMF are able to identify high-quality academics working on specific research topics, and agreeable to IMF terms and conditions. 3) Academic researchers are able to deliver contracted inputs consistent with timeframes envisaged for the project. 4) Counterpart inputs materialise as anticipated. **Five research themes of the MRLIC**: (1) Modelling and understanding policy choices (2) Understanding macro-financial linkages (3) Building resilience (4) Promoting structural change and institutional development (5) Enhancing inclusion
		Achieved		151	175				
		Source							
		IMF publications							
	Output Indicator 1.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
	Number of **research papers accepted for publication** in appropriate high-quality peer-reviewed journals	**Planned**	March 2020 (77)	By March 2021: H (90 papers) M (86 papers) L (82 papers)	By March 2022: H (99 papers) M (95 papers) L (91 papers)	By March 2023: H (108 papers) M (104 papers) L (100 papers)	By March 2024: H (117 papers) M (113 papers) L (109 papers)	By March 2023: H (126 papers) M (122 papers) L (118 papers)	Specific context: the average output per year (Yr 1 - 8) is 9. So medium case is 9 per year. High case 4 additional, low case 4 fewer.
		Achieved		90	99				
IMPACT WEIGHTING (%)		**Source**							
30		IMF to provide details of academic publications and acceptances							

OUTPUT 2	Output Indicator 2.1		Baseline	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Target (March 2025)	Assumptions
IMF research products (pollicy analysis, practical and operational tools and frameworks) produced under this project used by IMF country teams and partner authorities.	Application and use of tools and frameworks **by country teams.** Sub indicator 2.1.a: Courses offered to **IMF staff**	**Planned**	March 2020 (115) Courses offered to IMF staff (new indicator)	By March 2021: H (129) M (125) L (121) Of which: Courses H (4) M (3) L (2)	By March 2022: H (142) M (138) L (134) Of which: Courses H (7) M (6) L (5)	By March 2023: H (157) M (153) L (149) Of which: Courses H (11) M (10) L (9)	By March 2024: H (172) M (168) L (164) Of which: Courses H (15) M (14) L (13)	By March 2025: H (187) M (183) L (179) Of which: Courses H (19) M (18) L (17)	Specific context: the average output per year (Yr 1 - 8) is 15. Medium case is 15 per year, expect first year where, due to covid-19 restrictions, it is 10. High case is 4 additional, low case is 4 fewer. Specific context: medium case is 3 courses in first year, then 4 per year. High case one additional, low case one fewer.
		Achieved		129 (3 courses)	143 (8 courses)				
		Source							
		IMF reporting on evidence of number of country teams applying policy tools and frameworks							
	Output Indicator 2.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
	Application and use of tools and frameworks **by country authorities**. Sub-indicator 2.2.a: Courses offered to **country authorities**	**Planned**	March 2020 (46) Courses offered to country authorities (20)	By March 2021: H (52) M (49) L (46) Of which: Courses H (24) M (22) L (20)	By March 2022: H (57) M (56) L (55) Of which: Courses H (28) M (26) L (25)	By March 2023: H (68) M (65) L (62) Of which: Courses H (36) M (34) L (32)	By March 2024: H (73) M (70) L (67) Of which: Courses H (40) M (38) L (36)	By March 2025: H (78) M (75) L (72) Of which: Courses H (44) M (42) L (40)	Specific context: the average output per year (Yr 1 - 8) is 6. Medium case is 5 per year, expect first year where, due to covid-19 restrictions, it is 3. High case is 3 additional, low case is 3 fewer. Specific context: medium case is 2 courses in first year, then 4 per year. High case 2 additional, low case 2 fewer.
		Achieved		54 (25 courses)	60 (30 courses)				
IMPACT WEIGHTING (%)		**Source**							
30		IMF reporting evidence of number of country authorities applying policy tools and frameworks							

OUTPUT 3	Output Indicator 3.1		Baseline	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Target (March 2025)	Assumptions
Engagement by senior IMF policymakers on issues affecting LICs strengthened through this project.	High level policy conferences attended by senior IMF staff reflect findings of research papers funded under this project.	**Planned**	March 2020 (40)	By March 2021 H (45) M (43) L (41)	By March 2022: H (48) M (46) L (44)	By March 2023: H (56) M (54) L (52)	By March 2024: H (60) M (58) L (56)	By March 2025: H (64) M (62) L (60)	Specific context: the average output per year (Yr 1 - 8) is 5. Medium case is 4 per year (reflecting that this is slighly less important channel), expect first year where, due to covid-19 restrictions, it is 3. High case is 2 additional, low case is 2 fewer.
		Achieved		42	50				
		Source							
		IMF reporting on number of policy conferences drawing on outputs from the project							
	Output Indicator 3.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
	Results of the research papers produced reflected in IMF Board discussions and papers such as Staff Discussion Notes, policy memos to management etc. Sub-indicator 3.2.a Results of the research produced reflected in IMF Policy Papers.	**Planned**	March 2020 (41) IMF Policy Papers (20)	By March 2021: H (48) M (45) L (42) Of which: IMF Policy Papers H (25) M (23) L (21)	By March 2022: H (53) M (52) L (50) Of which: IMF Policy Papers H (27) M (25) L (23)	By March 2023: H (63) M (60) L (57) Of which: IMF Policy Papers H (29) M (27) L (25)	By March 2024: H (68) M (65) L (62) Of which: IMF Policy Papers H (32) M (30) L (28)	By March 2025: H (73) M (70) L (67) Of which: IMF Policy Papers H (35) M (33) L (31)	Specific context: the average output per year (Yr 1 - 8) is 5. Medium case is 5 per year, expect first year where, due to covid-19 restrictions, it is 4. High case is 3 additional, low case is 3 fewer. Specific context: the average output per year (Yr 1 - 8) is 3. Medium case is 3 per year. High case is 2 additional, low case is 2 fewer.
		Achieved		49 (22 IMF Policy Papers)	55 (24 IMF Policy Papers)				
IMPACT WEIGHTING (%)		**Source**							
30		IMF reporting on number of IMF Board discussions and IMF Policy Papers drawing on outputs from the project							

OUTPUT 4	Output Indicator 4.1		Baseline	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Target (March 2025)	Assumptions
IMF strengthens research capacity, by expanding the network of researchers and policy makers working on LIC macroeconomics	Number of commissioned research papers from external researchers on thematic areas.	**Planned**	March 2020 (30)	By March 2021: H (33) M (31) L (30)	By March 2022: H (35) M (33) L (32)	By March 2023: H (37) M (35) L (34)	By March 2024: H (39) M (37) L (35)	By March 2025: H (41) M (39) L (37)	Specific context: the average output per year (Yr 1 - 8) is 4. Medium case is 2 per year (reflecting that this is slighly less important channel), expect first year where, due to covid-19 restrictions, it is 1. High case is 2 additional, low case is 2 fewer.
		Achieved		32	34				
		Source							
		IMF reporting							
	Output Indicator 4.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
	Number of new or substantially revised toolkits (A toolkit is a new dataset that is put in a format that is accessible and applicable to the work of IMF country teams and	**Planned**	March 2020 (9)	By March 2021: H (12) M (11) L (10)	By March 2022: H (14) M (13) L (11)	By March 2023: H (15) M (14) L (13)	By March 2024: H (16) M (15) L (14)	By March 2025: H (17) M (16) L (15)	Specific context: the average output per year (Yr 1 - 8) is 1. Medium case is 2 in first two years, and 1 in final year. High case is 1 additional, low case is 1 fewer.
		Achieved		11	13				
		Source							
		IMF reporting							
	Output Indicator 4.3		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**	**Milestone 4**	**Target (March 2025)**	**Assumptions**
	Attendance of external researchers and policy makers at high-level policy conferences.	**Planned**	March 2020 (124)	By March 2021: H (138) M (134) L (130)	By March 2022: H (152) M (148) L (144)	By March 2023: H (175) M (171) L (167)	By March 2024: H (191) M (187) L (183)	By March 2025: H (207) M (203) L (199)	Specific context: the average output per year (Yr 1 - 8) is 16. Medium case is 16 per year, expect first year where, due to covid-19 restrictions, it is 10. High case is 4 additional, low case is 4 fewer.
		Achieved		139	155				
IMPACT WEIGHTING (%)		**Source**							
10		IMF reporting							

Notes: Output indicators are revised and streamlined as follows:
1. Books (previously output 1.3, which is removed) are recorded differently by counting chapters as working papers (output 1.1), published papers (output 1.2), or commissioned papers (output 4.1), depending on the nature of the book chapters.
2. Advisory committee meetings (previously output 1.4) is removed from the log-frame, but the occurance of the meetings will be reported.
3. The number of e-newsletters disseminated (previously output 4.4) is removed from the log-frame because the e-newsletter dissemination is now fully setup and will continue as a standard practice.
4. Descriptions of output indicators 1.1. and 3.2.a are revised, only for clarification purposes.
5. The number of outputs at the Baseline (i.e., at the end of Phase 3) is revised upward from 129 to 130 for ouput 1.1 and from 70 to 77 for output 1.2, reflecting historical revisions before the beginning of Phase 4.

APPENDIX 2. FINANCIAL REPORTS

International Monetary Fund
United Kingdom - Project on Macroeconomic Research in LICs
Bilateral - Cash Flow Statement
As of April 30, 2022
(In U.S. Dollars)

	Cumulative FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total
Contributions[1/]	17,255,155	2,368,482	1,968,935	2,088,790	-	2,270,441	25,951,803
Interest Earned	30,035	35,135	56,743	41,005	236	1,438	164,592
Total Cash Available	**17,285,190**	**2,403,617**	**2,025,678**	**2,129,795**	**236**	**2,271,879**	**26,116,395**
Expenses Paid[2/]	13,461,243	2,937,652	2,490,122	1,892,694	1,790,324	1,093,154	23,665,189
Cash Balance	**3,823,947**	**3,289,912**	**2,825,468**	**3,062,569**	**1,272,481**	**2,451,206**	**2,451,206**

1/Contributions are net of transfers and return of funds.
2/Expenses paid include the 7% TFM.

International Monetary Fund
United Kingdom - Project on Macroeconomic Research in LICs
Bilateral - Detailed Progress Report
As of April 30, 2022
(In U.S. Dollars)

Region/Country	Project ID	Project Description	Status	Start Date	End Date	Latest Approved/ Proposed Budget	Expenses	Remaining Balance 1/	Execution (%)
IMF						26,345,131	21,921,831	4,423,301	
International Monetary Fund	IMF_IMF_2012_01	DFID Macro Research 1&2	Closed	2012-05-01	2017-03-31	12,451,409	12,451,410	-	100%
		HQ led missions including entire mission team				6,411,796	6,411,796	-	-
		Short-term Advisors - CD delivery				477,102	477,102	-	-
		Research HQ based / Visiting Scholars				2,235,765	2,235,765	-	-
		Seminars & Study Tours				1,273,384	1,273,384	-	-
		Project Backstopping				1,911,379	1,911,379	-	-
		Project Management				141,984	141,984	-	-
International Monetary Fund	SPR_IMF_2017_04	DFID Macro Research 3	Closed	2017-04-01	2020-03-31	6,991,674	6,991,674	-	100%
		HQ led missions including entire mission team				389,849	389,849	-	-
		Short-term Advisors - CD delivery				48,460	48,460	-	-
		Research HQ based / Visiting Scholars				4,677,110	4,677,110	-	-
		Seminars & Study Tours				400,115	400,115	-	-
		Project Backstopping				1,054,899	1,054,899	-	-
		Project Management				84,611	84,611	-	-
		Exceptional Expenses				335,282	335,282	-	-
		Language Services				1,348	1,348	-	-
International Monetary Fund	SPR_IMF_2020_02	DFID-4 Macro Research	Approved	2020-04-01	2023-03-31	6,902,048	2,673,915	4,228,133	39%
		HQ led missions including entire mission team				22,202	22,202	-	-
		Research HQ based / Visiting Scholars				1,185,909	1,185,909	-	-
		Project Backstopping				207,321	207,321	-	-
		Project Management				20,668	20,668	-	-
		Exceptional Expenses				215,356	215,356	-	-
		Language Services				822	822	-	-
		CD project management 2/				305,000	36,045	-	-
		Development of CD tools 2/				1,550,000	16,499	-	-
		Development of general CD technical materials 2/				2,568,671	913,383	-	-
		Development of training courses or other learning materials 2/				16,100	31,491	-	-
		Interactive learning and workshops 2/				810,000	24,219	-	-
Sub Total						**26,345,131**	**22,116,999**	**4,228,133**	
Trust Fund Management Fee						1,844,159	1,548,190	295,969	
Grand Total						**28,189,290**	**23,665,189**	**4,524,103**	

Agreement Summary	
Contributions to date	25,951,803
Net Transfers	-
Interest Earned	164,592
Total Inflows(A)	**26,116,395**
Expenses	23,665,189
Remaining Budget (including projects pending approval)	4,524,103
Total Outflows(B)	**28,189,291**
Future Contributions (based on signed agreements)(C)	2,118,908
Total Available & Future Contributions(A-B+C)	**46,012**

1/ The remaining balance for closed projects is zeroed out upon project completion.
2/ These items do not include costs related to Long-Term Experts.

APPENDIX 3. RESEARCH OUTPUTS

Output 1.1 – Working Papers

Topic 1. Modelling and understanding policy choices

1. Departmental Paper: Taking Stock of IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems
   Nils Mæhle, Tibor Hlédik, Mikhail Pranovich, and Carina Selander

   Summary: This paper takes stock of forecasting and policy analysis system capacity development (FPAS CD), drawing extensively on the experience and lessons learned from developing FPAS capacity in the central banks. By sharing the insights gained during FPAS CD delivery and outlining the typical tools developed in the process, the paper aims to facilitate the understanding of FPAS CD within the IMF and to inform future CD on building macroeconomic frameworks. As such, the paper offers a qualitative assessment of the experience with FPAS CD delivery and the use of FPAS in the decision-making process in central banks.

2. The Distributional Implications of the Impact of Fuel Price Increases on Inflation
   Kangni Kpodar and Boya Liu

   Summary: This paper investigates the response of consumer price inflation to changes in domestic fuel prices, looking at the different categories of the overall consumer price index (CPI). We then combine household survey data with the CPI components to construct a CPI index for the poorest and richest income quintiles with the view to assess the distributional impact of the pass-through. To undertake this analysis, the paper provides an update to the Global Monthly Retail Fuel Price Database, expanding the product coverage to premium and regular fuels, the time dimension to December 2020, and the sample to 190 countries. Three key findings stand out. First, the response of inflation to gasoline price shocks is smaller, but more persistent and broad-based in developing economies than in advanced economies. Second, we show that past studies using crude oil prices instead of retail fuel prices to estimate the pass-through to inflation significantly underestimate it. Third, while the purchasing power of all households declines as fuel prices increase, the distributional impact is progressive. But the progressivity phases out within 6 months after the shock in advanced economies, whereas it persists beyond a year in developing countries.

Topic 2. Understanding macro-financial linkages

3. Defying the Odds: Remittances During the COVID-19 Pandemic
   Kangni R Kpodar, Montfort Mlachila, Saad N Quayyum and Vigninou Gammadigbe

   Summary: This paper provides an early assessment of the dynamics and drivers of remittances during the COVID-19 pandemic, using a newly compiled monthly remittance dataset for a sample of 52 countries, of which 16 countries with bilateral remittance data. The paper documents a strong resilience in remittance flows, notwithstanding an unprecedent global recession triggered by the pandemic. Using the local projection approach to estimate the impulse response functions of remittance flows during Jan 2020-Dec 2020, the paper provides evidence that: (i) remittances responded positively to COVID-19 infection rates in migrant home countries, underscoring its role as an important automatic stabilizer; (ii) stricter containment measures have the unintended consequence of dampening remittances; and (iii) a shift from informal to formal remittance channels due to travel restrictions appears to have also played a role in the surge in formal remittances. Lastly, the size of the fiscal stimulus in host countries is positively associated with remittances as the fiscal response cushions the economic impact of the pandemic.

4. The S-curve: Understanding the Dynamics of Worldwide Financial Liberalization
   Nan Li, Chris Papageorgiou, Tong Xu and Tao Zha

   Summary: Using a novel database of domestic financial reforms in 90 countries over 1973-2014, we document that global financial liberalization followed an S-curve path: reforms were slow and gradual in early periods, accelerated during the 1990s, and slowed down after 2000. We estimate a learning model that explains these dynamics. Policymakers updated their beliefs about the growth effects of financial reforms by learning from their own and other countries' experiences. Positive growth surprises in advanced economies helped accelerate belief updating worldwide, leading to the global wave of financial liberalization in the 1990s. The 2008 financial crisis, however, caused significant belief reversals.

5. The World Uncertainty Index
   Hites Ahir, Nicholas Bloom and Davide Furceri

   Summary: We construct the World Uncertainty Index (WUI) for an unbalanced panel of 143 individual countries on a quarterly basis from 1952. This is the frequency of the word “uncertainty” in the quarterly Economist Intelligence Unit country reports. Globally, the Index spikes around major events like the Gulf War, the Euro debt crisis, the Brexit vote and the COVID pandemic. The level of uncertainty is higher in developing countries but is more synchronized across advanced economies with their tighter trade and financial linkages. In a panel vector autoregressive setting we find that innovations in the WUI foreshadow significant declines in output. This effect is larger and more persistent in countries with lower institutional quality, and in sectors with greater financial constraints.

Topic 3. Building resilience

6. Global Climate Change Mitigation, Fossil-Fuel Driven Development, and the Role of Financial and Technology Transfers: A Simple Framework
   Johannes Wiegand

   Summary: Climate financing and compensation have emerged as key themes in the international climate mitigation debate. According to one argument in support of compensation, advanced economies (AEs) have used up much of the atmosphere’s absorptive capacity, thus causing global warming and blocking a similar, fossil-fuel driven development path for emerging markets and developing economies (EMDEs). This paper develops a simple model of a sequential, fossil-fuel driven development process to discuss these issues systematically. The results suggest: (i) AEs have typically a stronger interest in climate change mitigation than EMDEs, (ii) from an equity perspective, compensation is called for only if EMDEs are relatively small; (iii) there can also be an efficiency case for compensation, however, with AEs buying EMDEs out of some of their GHG emissions; (iv) ultimately, a superior option—for both the world’s climate and growth prospects—is the development of clean energy technologies by AEs and their transfer to EMDEs. The latter requires strong mitigation efforts by AEs even if EMDEs fail to play along initially.

7. How do Climate Shocks Affect the Impact of FDI, ODA and Remittances on Economic Growth?
   Alassane Drabo

   Summary: The three main financial inflows to developing countries have largely increased during the last two decades, despite the large debate in the literature regarding their effects on economic growth which is not yet clear-cut. An emerging literature investigates the dependence of their effects on some country characteristics such as human and physical capital constraint, macroeconomic policy and institutional capacity. This paper extends the literature by arguing that climate shocks may undermine the effect of Foreign Direct Investment (FDI), official development assistance (ODA) and migrants' remittances on economic expansion. Based on neoclassical growth framework, the theoretical model indicates that FDI, ODA, and remittances improve economic growth, and the size of the effect increases with good absorptive capacity. However, climate shocks reduce this positive effect of financial flows in developing countries. Using a sample of low and middle-income countries from 1995 to 2018, the empirical investigation confirms the theoretical conclusions. Developing countries should build strong resilience to climate change. Actions are also needed at global level to reduce greenhouse gases emissions, and build strong structural resilience to climate shocks especially in developing countries.

Topic 4. Promoting structural change and institutional development

8. Macro-Fiscal Gains from Anticorruption Reforms in the Republic of Congo [Chapter 6 of Good Governance in Sub-Saharan Africa]

   Giovanni Melina, Hoda Selim, and Concepcion Verdugo-Yepes

   Summary: Notwithstanding the anticorruption efforts the authorities have made since 2017, this chapter argues that oil revenue management and public investment in Congo remain vulnerable to corruption as a result of insufficient transparency and accountability. Corruption in these sectors is potentially a significant factor of weak macro-fiscal outcomes. Nevertheless, macro-fiscal gains from anticorruption reforms are significant. Depending on how ambitious reforms are, the potential additional growth can range between 0.8 and 1.8 percentage points per year in the long term over the next 10 years. Furthermore, debt can decline by 2.25 to 3 percentage points of GDP per year over the same period. Oil sector governance reforms could target improving transparency in oil trading and strengthening oversight and accountability of Congo's national oil company. These reforms would be supported by measures to enhance the framework for anti–money laundering. Measures to reform public investment management and efficiency would include increasing transparency of public investment execution, strengthening external controls, and restructuring the internal audit system.

Topic 5. Enhancing inclusion

9. Intergenerational Social Mobility in Africa Since 1920
   Rasmane Ouedraogo and Nicolas Syrichas

   Summary: The COVID-19 crisis has a severe impact on education and employment and exposed the many social inequities that make some populations more vulnerable to shocks. Despite a vast literature on social mobility in advanced economies, little is known about it in African countries, mainly due to data limitations. Using a large, harmonized dataset of more than 72 million individuals, we fill this gap and examine socioeconomic status mobility across generations, measured by educational and occupational attainment. We uncover the substantial geographical variations in the degree of upward/downward educational and occupational mobility across and within African countries, and the gender and rural/urban divide. Additionally, we explore the determinants of social mobility in the African region. We find that social mobility on the continent could be partly explained by observable individual characteristics (gender, marital status, age, etc.), and that educational mobility is a driver of occupational mobility. Lastly, we show that the quality of institutions, the level of public spending on education, social protection coverage, natural resource endowments, and countries' fragility are strong predictors of social mobility in Africa. This paper has recently been presented in an Analytical Corner session during the IMF-World Bank April 2022 Spring Meetings. The results were also published as a blog on F&D magazine.

10. The Close Relationship between Informality and Gender Gaps in Sub-Saharan Africa
    [Chapter 7 of The Global Informal Workforce: Priorities for Inclusive Growth]
    Vivian Malta, Lisa Kolovich, Angelica Martínez Leyva, and Marina M. Tavares

    Summary: This chapter investigates the factors that can explain the larger presence of women in the informal sector. The authors show the association between female overrepresentation in the informal sector and gender gaps in education, social and legal norms biased against women, and the legal framework. In particular, they find that low education is usually more relevant for women as a driver of informal employment.

11. Epidemics, Gender, and Human Capital in Developing Countries
    Stefania Fabrizio, Diego B. P. Gomes, Carine Meyimdjui, and Marina M. Tavares

    Summary: Epidemics have disrupted lives for centuries with deleterious human capital and economic repercussions. This paper investigates how epidemics episodes have impacted school dropouts in developing countries, considering 623 epidemics episodes across countries from 1970 to 2019. The results show that, on average, epidemics reduce completion rates by about 2.6 and 2.1 percentage points in primary and lower secondary education respectively, with girls more severely affected than boys. Using detailed micro data for Senegal, the paper also estimates the potential loss of lifelong earnings and finds that the potential labor earnings loss from dropping out of primary and secondary school is almost double for girls than for boys. The results of this paper have been presented as an Analytical Corner session during the IMF-World Bank October 2021 Annual Meetings.

12. Loss-of-Learning and the Post-Covid Recovery in Low-Income Countries
    Edward F Buffie, Christopher S Adam, Luis-Felipe Zanna and Kangni R Kpodar

    Summary: We analyze the medium-term macroeconomic impact of the Covid-19 pandemic and associated lock-down measures on low-income countries. We focus on the impact over the medium run of the degradation of health and human capital caused by the pandemic and its aftermath, exploring the trade-offs between rebuilding human capital and the recovery of livelihoods and macroeconomic sustainability. A dynamic general equilibrium model is calibrated to reflect the structural characteristics of vulnerable low-income countries and to replicate key dimensions of the Covid-19 shock. We show that absent significant and sustained external financing, the persistence of loss-of-learning effects on labor productivity is likely to make the post-Covid recovery more attenuated and more expensive than many contemporary analyses suggest.

13. Links Between Growth, Inequality, and Poverty [Chapter 2 of How to Achieve Inclusive Growth]
    Valerie Cerra, Ruy Lama and Norman Loayza

    Summary: Is there a tradeoff between raising growth and reducing inequality and poverty? This chapter reviews the theoretical and empirical literature on the complex links between growth, inequality, and poverty, with causation going in both directions. The evidence suggests that growth can be effective in reducing poverty, but its impact on inequality is ambiguous and depends on the underlying sources of growth. The impact of poverty and inequality on growth is likewise ambiguous, as several channels mediate the relationship. But most plausible mechanisms suggest that poverty and inequality reduce growth, at least in the long run. Policies play a role in shaping these relationships and those designed to improve equality of opportunity can simultaneously improve inclusiveness and growth.

14. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]
    Asmaa El-Ganainy, Ekkehard Ernst, Rossana Merola, Richard Rogerson, and Martin Schindler [Commissioned]

    Summary: Labor earnings are the dominant income source for most individuals. Thus, an inclusive labor market is key for ensuring inclusive growth. In this chapter we propose four principles that an inclusive labor market will embody: access, fairness, protection and voice. While measuring inclusivity presents challenges, we discuss how data can be used to shed light on the extent of inclusivity and document cross-country trends and stylized facts. We also discuss the role of policy in achieving an inclusive labor market, focusing on the need to rebalance growth; improve risk sharing; and fight discrimination. Several messages emerge. First, some policies entail a trade-off between the different dimensions of inclusivity. Second, it is important to view policies as a bundle, taking into account substitution and complementarities. Third, some policies are win-win, in the sense that they both increase inclusivity and improve overall efficiency.

15. Financial Inclusion [Chapter 4 of How to Achieve Inclusive Growth]
    Adolfo Barajas, Thorsten Beck, Mohamed Belhaj and Sami Ben Naceur

    Summary: The past two decades have seen a rapid increase in interest in financial inclusion, both from policymakers and researchers. This chapter surveys the main findings from the literature, documenting the trends over time and gaps that have arisen across regions, income levels, and gender, among others. It points out that structural, as well as policy-related, factors, such as encouraging banking competition or channelling government payments through bank accounts, play an important role, and describes the potential macro and microeconomic benefits that can be derived from greater financial inclusion. It argues that policy should aim to identify and reduce frictions holding back financial inclusion, rather than targeting specific levels of inclusion. Finally, it suggests areas for future research.

16. Technological Progress and Artificial Intelligence [Chapter 5 of How to Achieve Inclusive Growth]
    Anton Korinek, Martin Schindler and Joseph E. Stiglitz

    Summary: Advances in artificial intelligence and automation have the potential to be labor-saving and to increase inequality and poverty around the globe. They also give rise to winner-takes-all dynamics that advantage highly skilled individuals and countries that are at the forefront of technological progress. This chapter analyzes the economic forces behind these developments and delineate economic policies to mitigate the adverse effects while leveraging the potential gains from technological advances. It also proposes domestic policy measures and reforms to the global system of governance that make the benefits of advances in artificial intelligence more inclusive.

17. Competition and Innovation [Chapter 6 of How to Achieve Inclusive Growth]
    Philippe Aghion, Reda Cherif and Fuad Hasanov

    Summary: The chapter provides an overview of the theories and empirical evidence on the complex relationship among innovation, competition, and inclusive growth. Competition and innovation-led growth are critical to drive productivity gains and supports broad-based growth. However, new technologies and trends in market concentration are stifling future innovation while contributing to the marked increase in inequality. Beyond consumer welfare in a narrow market, competition policy should adapt to this new reality by considering the spillover and dynamic effects of market power, especially on firm entry, innovation and inequality. Innovation policies should tackle not only government failures but also market failures.

18. Trade [Chapter 7 of How to Achieve Inclusive Growth]
    Marc Bacchetta, Valerie Cerra, Roberta Piermartini and Maarten Smeets

    Summary: This chapter surveys the literature on the relationship between international trade and inclusive growth. It examines claims that the rise in inequality in many countries can be attributed to the concurrent rise in trade competition, especially from EMEs like China, spurring trade tensions and protectionist measures. The chapter investigates the conflicting literature showing the aggregate benefits of trade versus the adverse and persistent impact of trade, especially import competition, on specific industries and local communities. It then reviews the evidence for using trade policies and other complementary policies for adjustment and compensation to those groups adversely affected by trade.

19. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]
    Barry Eichengreen, Balazs Csonto, and Asmaa El-Ganainy [Commissioned]

    Summary: This chapter reviews the academic and policy debate on the association between financial globalization and inequality. The evidence suggests that the distributional impact of financial globalization is context-specific and different types of flows have different distributional implications, though the consensus points to unequalizing effects of capital account liberalization. The overall impact thus depends on the composition of flows, their interaction, as well as on the broader economic and institutional conditions. A comprehensive set of policies, including macroeconomic and financial sector policies, and labor and product markets, is important to enable wider sharing of the benefits of financial globalization.

20. Tax Policy [Chapter 12 of How to Achieve Inclusive Growth]
    Khaled Abdel-Khader and Ruud De Mooij

    Summary: This chapter discusses the theory and practice of tax design to achieve an efficient and equitable outcome in support of inclusive growth. It starts with a discussion of the key principles from tax theory to guide practical tax design. Then, it elaborates on the practice of tax policy making, thereby discussing key choices in the structure of the personal income tax on labor, capital income, wealth, the corporate income tax, and consumption taxes. The chapter concludes by highlighting the political economy considerations of the issues with concrete recommendations as to how to implement tax reform.

21. Public Expenditure [Chapter 13 of How to Achieve Inclusive Growth]
    Younes Zouhar, Jon Jellema, Nora Lustig and Mohamed Trabelsi

    Summary: This chapter explores the role of public expenditure in fostering inclusive growth. It starts with a presentation of salient features of public expenditure. Then, it lays out an analytical framework that describes the channels through which public expenditure affects inequality and poverty in the short and long term. Based on a review of the empirical literature, it discusses the policy options. Finally, the chapter assesses the role of key factors such as the initial conditions, and the institutions, in shaping the inclusive spending policies.

22. Education and Health [Chapter 14 of How to Achieve Inclusive Growth]
    Deon Filmer, Roberta Gatti, Halsey Rogers, Nikola Spatafora and Drilona Emrullahu

    Summary: The chapter discusses existing shortfalls and inequalities in the accumulation of human capital—knowledge, skills, and health. It analyzes their immediate and systemic causes and assess the scope for public intervention. The broad policy goals should be to improve: the quality, and not just the quantity, of education and health care; outcomes for disadvantaged groups; and lifelong outcomes. The means to achieve these goals, while maximizing value for money, include focusing on results rather than just inputs; moving from piecemeal interventions to systemic reform; and adopting a "whole-of-society" approach. Reforms must be underpinned by a robust evidence base.

23. Sharing Resource Wealth and Addressing Fragility [Chapter 19 of How to Achieve Inclusive Growth]
    Nathalie Pouokam

    Summary: This chapter discusses the main challenges faced by resource-rich nations in promoting equity; describes policy tools available for managing exhaustible natural resources; and analyzes the relationship between resource wealth and state fragility. The chapter argues that human capital accumulation, innovation, and technology diffusion can help escape the trap of low growth and resource dependence that plagues so many developing countries. But to make this possible, resource-rich nations must sustain strong citizen participation in the policy making to hold governments accountable and ensure the inclusive management of resource wealth.

24. Climate Change [Chapter 20 of How to Achieve Inclusive Growth]
    Amar Bhattacharya, Maksym Ivanyna, William Oman and Nicholas Stern

    Summary: Climate change is a major threat to the sustainability and inclusiveness of our societies. A just transition to a low-carbon economy is the only viable way forward. This chapter reviews the science of climate change and the socio-economic damages that it causes and could cause in the remainder of this century. It then outlines key policies for a successful transition: pricing carbon, aligning the financial system with climate objectives, boosting public spending on sustainable infrastructure, deploying low-carbon industrial and innovation policy, building resilience and adapting to the climatic changes that are coming, better measurement of well-being and sustainability, and crucially, making the transition fair by ensuring socially just outcomes.

Working papers produced before Phase 4 (for the record)

1. Twin Deficits in Developing Economies [published in July 2018]
   Davide Furceri, Aleksandra Zdzienicka

   Summary: This paper provides new evidence on the existence and magnitude of the "twin deficits" in developing economies. It finds that a one percent of GDP unanticipated increase in the government budget balance improves, on average, the current account balance by 0.8 percentage point of GDP. This effect is substantially larger than that obtained using standard measures of fiscal impulse, such as the cyclically-adjusted budget balance. The results point to heterogeneity across countries and over time. The effect tends to be larger: (i) during recessions; in countries (ii) that are more open to trade; (iii) that have less flexible exchange rate regimes; and (iv) with lower initial public debt-to-GDP ratios.

Output 1.2 – Published Papers

Topic 1. Modelling and understanding policy choices

1. Building back better: How big are green spending multipliers?
   Nicoletta Batini, Mario Di Serio, Matteo Fragetta, Giovanni Melina and Anthony Waldron
   Ecological Economics

   Summary: Is there a trade-off between spending on the green economy and an economy's strength? This paper addresses this question by estimating output multipliers for spending in clean energy and biodiversity conservation, and by comparing these to multipliers of spending on non-ecofriendly energy and land use activities. Using a new international dataset, we arrive at two key results. First, we find that every dollar spent on key carbon-neutral or carbon-sink activities can generate more than a dollar's worth of economic activity, whereas non-green spending returns less than a dollar. Second, for categories of spending where formal comparisons are possible, like renewable versus fossil fuel energy, we find that multipliers on green spending are about twice as large as their non-green counterparts. The point estimates of the multipliers are 1.1–1.7 for renewable energy investment and 0.4–0.7 for fossil fuel energy investment, depending on horizon and specification. These findings survive several robustness checks and lend support to bottom-up analyses that find that stabilizing climate and reversing biodiversity loss go hand in hand with economic prosperity. The countries in the sample for green land-use investment are from Africa or other lower-income countries.

2. The distributional implications of the impact of fuel price increases on inflation
   Kangni Kpodar and Boya Liu
   Energy Economics

   Summary: This paper investigates the response of consumer price inflation to changes in domestic fuel prices, looking at the different categories of the overall consumer price index (CPI). We then combine household survey data with the CPI components to construct a CPI index for the poorest and richest income quintiles with the view to assess the distributional impact of the pass-through. To undertake this analysis, the paper provides an update to the Global Monthly Retail Fuel Price Database, expanding the product coverage to premium and regular fuels, the time dimension to December 2020, and the sample to 190 countries. Three key findings stand out. First, the response of inflation to gasoline price shocks is smaller, but more persistent and broad-based in developing economies than in advanced economies. Second, we show that past studies using crude oil prices instead of retail fuel prices to estimate the pass-through to inflation significantly underestimate it. Third, while the purchasing power of all households declines as fuel prices increase, the distributional impact is progressive. But the progressivity phases out within 6 months after the shock in advanced economies, whereas it persists beyond a year in developing countries.

Topic 2. Understanding macro-financial linkages

3. The welfare implications of exchange rate choices in developing agricultural economies
   Tara Iyer
   Journal of Macroeconomics

   Summary: This paper analyzes the appropriate choice of an exchange rate regime in agricultural commodity-exporting economies. In an estimated open economy model that incorporates key structural characteristics of agricultural commodity exporters including dual labor markets and imperfect asset markets, the benefits of exchange rate flexibility are shown to depend on the extent of labor and product market development. With developed markets, flexible exchange rates are preferred as they allow for greater relative price fluctuations, which amplify the transmission mechanism of labor re-allocation upon commodity price volatility. When labor and product markets are not well-developed, however, international relative price adjustments exacerbate currency and factor misalignments. A nominal exchange rate peg, by mitigating relative wage and price fluctuations, increases welfare relative to a float. Given the current low level of labor and product market development across most agricultural commodity exporters, the study provides a novel rationale as to why exchange rate targeting is implemented in many developing agricultural economies.

Topic 3. Building resilience

4. Trends and cycles in CO2 emissions and incomes: Cross-country evidence on decoupling
   Gail Cohen, Joao Tovar Jalles, Prakash Loungani and Pietro Pizzuto
   Journal of Macroeconomics

   Summary: This paper provides cross-country evidence on the relationship between growth in CO2 emissions and real GDP growth from 1960 to 2018. The focus is on distinguishing longer-run trends in this relationship from short-run cyclical fluctuations, and on documenting changes in these relationships over time. Using two filtering techniques for separating trend and cycle, we find that long-run trends show evidence of decoupling in richer nations—particularly in European countries—but not yet in developing economies, and that there is stronger evidence of decoupling over the 1990 to 2018 sub-period than over the earlier 1960 to 1989 sub-period. There is also a strong cyclical relationship between emissions and real GDP growth in both advanced and developing economies, and the strength of this relationship has not weakened much over time. The cyclical relationship is largely symmetric: emissions fall about as much during recessions as they rise during booms. The transition to a low-carbon economy will thus require continued progress not only in bringing down trend emissions, particularly in developing economies, but also in taming the increase in emissions that occurs during the boom phase of the business cycle.

Topic 4. Promoting structural change and institutional development

5. Will the AI revolution cause a great divergence?
   Cristian Alonso, Andrew Berg, Siddharth Kothari, Chris Papageorgiou and Sidra Rehman
   Journal of Monetary Economics

   Summary: Implications of a new wave of technological change that substitutes pervasively for labor are examined with particular focus on developing countries. While the model considered is minimalist by design, the resulting conclusions are powerful: improvements in the productivity of “robots” drive divergence, as advanced countries differentially benefit from their initially higher robot intensity, driven by their endogenously higher wages and stock of complementary traditional capital. Capital—if internationally mobile—is pulled “uphill”, resulting in a transitional GDP decline in the developing country. When robots substitute only for unskilled labor, the terms of trade, and hence GDP, may decline permanently.

6. Growth-equity trade-offs in structural reforms
Jonathan D. Ostry, Andrew Berg and Siddharth Kothari
Scottish Journal of Political Economy

Summary: Do structural reforms that aim to boost potential output also change the distribution of income? We shed light on this question by looking at the broad patterns in the cross-country data covering advanced, emerging-market, and low-income countries. Our main finding is that there is indeed evidence of a growth-equity trade-off for some important reforms. Financial and capital account liberalization seem to increase both growth and inequality, as do some measures of liberalization of current account transactions. Reforms aimed at strengthening the impartiality of and adherence to the legal system seem to entail no growth-equity trade-off—such reforms are good for growth and do not worsen inequality. The results for our index of network reforms as well as our measure of the decentralization of collective labor bargaining are the weakest and least robust, potentially due to data limitations. We also ask: If some structural reforms worsen inequality, to what degree does this offset the growth gains from the reforms themselves? While higher inequality does dampen the growth benefits, the net effect on growth remains positive for most reform indicators.

7. The role of productivity, transportation costs, and barriers to intersectoral mobility in structural transformation
Cem Karayalcin and Mihaela Pintea
Economic Modelling

Summary: The process of economic development is characterized by substantial resource reallocations across sectors. In this paper, we construct a baseline multi-sector model with barriers to the movement of labor from low-productivity traditional agriculture to modern sectors. With such barriers in place, we show that improved productivity in modern sectors (including agriculture) or reduced transportation costs may lead to rising agricultural employment and, through terms of trade effects, may harm traditional farmers if this sector is larger than a critical level. This suggests that policy advice based on the earlier literature needs revision. Reducing mobility barriers (through reduced costs for skills acquisition and institutional changes) and improving the productivity of traditional farmers must precede policies designed to increase the productivity of modern sectors or reduce transportation costs.

Topic 5. Enhancing inclusion

8. The Distributional Effects of Government Spending Shocks in Developing Economies
Davide Furceri, Jun Ge, Prakash Loungani and Giovanni Melina
Review of Development Economics

Summary: We construct unanticipated government spending shocks for 103 developing countries from 1990 to 2015 and study their effects on income distribution. We find that unanticipated fiscal consolidations lead to a long-lasting increase in income inequality, while fiscal expansions lower inequality. The results are robust to several measures of income distribution and size of the fiscal shocks, to an alternative identification strategy, across expansions and recessions and across country groups (low-income countries vs. emerging markets). An additional contribution of the paper is the computation of the medium-term inequality multiplier. This is on average about 1 in our sample, meaning that a cumulative decrease in government spending of 1% of gross domestic product over 5 years is associated with a cumulative increase in the Gini coefficient over the same period of about 1 percentage point. The multiplier is larger for total government expenditure than for public investment and consumption (with the former having larger effect), likely due to the redistributive role of transfers. Finally, we find that (unanticipated) fiscal consolidations lead to an increase in poverty.

9. Serving the Underserved: Microcredit As a Pathway to Commercial Banks
   Sumit Agarwal, Thomas Kigabo, Camelia Minoiu, Andrea F. Presbitero and André F. Silva
   The Review of Economics and Statistics

   Summary: A large-scale microcredit expansion program—together with a credit bureau accessible to all lenders—can enable unbanked borrowers to build a credit history, facilitating their transition to commercial banks. Loan-level data from Rwanda show the program improved access to credit and reduced poverty. A sizable share of first-time borrowers switched to commercial banks, which cream-skim less risky borrowers and grant them larger, cheaper, and longer-maturity loans. Switchers have lower default risk than non-switchers and are not riskier than other bank borrowers. Switchers also obtain better loan terms from banks compared with first-time bank borrowers without a credit history.

Published papers produced before Phase 4 (for the record)

1. Financial intermediation costs in low income countries: The role of regulatory, institutional, and macroeconomic factors [published in March 2013]
   Tigran Poghosyan
   Economic Systems

   Summary: We analyze factors driving persistently higher financial intermediation costs in low-income countries (LICs) relative to emerging market (EM) country comparators. Using the net interest margin as a proxy for financial intermediation costs at the bank level, we find that within LICs a substantial part of the variation in interest margins can be explained by bank-specific factors: margins tend to increase with higher riskiness of credit portfolio, lower bank capitalization (or lower risk aversion), and smaller bank size. Overall, we find that concentrated market structures and lack of competition in LICs banking systems and institutional weaknesses constitute the key impediments preventing financial intermediation costs from declining. Our results provide strong evidence that policies aimed at fostering banking competition and strengthening institutional frameworks can reduce intermediation costs in LICs.

2. Investment scaling up and the role of government [published in February 2016]
   Matteo F. Ghilardi and Sergio Sola
   Applied Economics

   Summary: This article studies the fiscal and welfare implications of a scaling up of public investment when the government is subject to inefficiencies on the spending and on the tax collection side. In our simulations, the scaling up of public investments results in higher long-run output and consumption levels but requires a fiscal stabilization package in order to preserve fiscal sustainability. The effects on consumers' welfare after the fiscal adjustment are nontrivial. Our welfare analysis shows that consumers' welfare is increased when the government smooths the fiscal adjustment via higher borrowing and not through an increase in taxation. Moreover, the comparison between several stabilization packages via tax adjustment shows that higher welfare is achieved when the government relies mostly on taxation of capital as this allows higher levels of consumption. Lower fiscal costs that do not undermine fiscal sustainability can however be achieved if the government manages to reduce inefficiency in tax collection. Finally, we consider a change in the trade regime that causes a decline in revenues. We find that the higher fiscal burden required to preserve fiscal sustainability would completely wipe out the welfare gain of higher public investments.

3. The Finance and Growth Nexus Re-Examined: Do All Countries Benefit Equally? [published in February 2016]
   Adolfo Barajas, Ralph Chami, and Seyed Reza Yousefi
   Journal of Banking and Financial Economics

   Summary: A large theoretical and empirical literature has focused on the impact of financial deepening on economic growth throughout the world. This paper contributes to the literature by investigating whether this impact differs across regions, income levels, and types of economy. Using a rich data set for 150 countries for the period 1975–2005, dynamic panel estimation results suggest that the beneficial effect of financial deepening on economic growth in fact displays measurable heterogeneity; it is generally smaller in oil exporting countries; in certain regions, such as the Middle East and North Africa (MENA); and in lower-income countries. Further analysis suggests that these differences might be driven by the degree of competition, and related to differences in the ability to provide widespread access to financial services.

4. Implications of food subsistence for monetary policy and inflation [published in July 2016]
   Rafael Portillo, Luis-Felipe Zanna, Stephen A. O'Connell, and Richard Peck
   Oxford Economic Papers

   Summary: We introduce subsistence requirements in food consumption into a simple new-Keynesian model with flexible food and sticky non-food prices. We study how the endogenous structural transformation that results from subsistence affects the dynamics of the economy, the design of monetary policy, and the properties of inflation at different levels of development. A\ calibrated version of the model encompasses both rich and poor countries and broadly replicates the properties of inflation across the development spectrum, including the dominant role played by changes in the relative price of food in poor countries. We derive a welfare-based loss function for the monetary authority and show that optimal policy calls for complete (in some cases near-complete) stabilization of sticky-price non-food inflation, despite the presence of a food-subsistence threshold. Subsistence amplifies the welfare losses of policy mistakes, however, raising the stakes for monetary policy at earlier stages of development.

5. Harnessing Resource Wealth for Inclusive Growth in Fragile Western African States [published in March 2017]
   Corinne Deléchat, Shu-Chun S. Yang, Will Clark, Pranav Gupta, Malangu Kabedi-Mbuyi, Mesmin Koulet-Vickot, Carla Macario, Toomas Orav, Manuel Rosales, René Tapsoba, Dmitry Zhdankin
   Journal of African Economies

   Summary: Fragile countries face competing needs for allocating valuable natural resource potential, including for using the resource revenue to scale up public investment and close large infrastructure gaps. This paper uses the recently developed Debt, Investment, Growth and Natural Resources (DIGNAR) model to characterise optimal allocations of resource wealth, with a focus on the particular economic structures of fragile countries. This study adds to the existing literature by not only carefully applying the DIGNAR model to quantify key policy trade-offs facing resource-rich fragile Western African countries such as Côte d'Ivoire, Guinea, Liberia and Sierra Leone, but also by extending the model to account for the possibility of direct social transfers and of an endogeneous determination of the investment path based on fiscal rules. Key results, with far-reaching policy implications for accelerating inclusive growth stand out from the simulations. First, compared with a conservative approach based on the permanent income analysis, a sustainable non-resource deficit target is robust to the high uncertainty of resource revenues, while delivering growth benefits through higher productive public capital. Second, distributing part of resource revenues as transfers raises private consumption immediately, suggesting that a fraction of the resource revenue could be used to expand safety nets in fragile states.

6. Government spending effects in low-income countries [published in July 2018]
   Wenyi Shen, Shu-Chun S. Yang, and Luis-Felipe Zanna
   Journal of Development Economics

   Summary: Despite the voluminous literature on fiscal policy, very few papers focus on low-income countries (LICs). This paper develops a New Keynesian small open economy model to show, analytically and numerically, that several prevalent features of LICs—dependence on external financing, public investment inefficiency, and a low degree of home bias in public investment—play important roles in government spending effects. External financing increases the resource envelope, mitigating the crowding out effects, but it tends to appreciate the real exchange rate, lowering traded output. Although capital scarcity in LICs implies high returns to public capital, low marginal investment efficiency can substantially dampen the output multiplier. Also, public investment may not be effective in stimulating output in the short run, as LICs often rely on imports to a large extent to carry out public investment projects, weakening its role as a short-run demand stimulus.

7. The Monetary Transmission Mechanism in the Tropics: A Case Study Approach [published in June 2019]
   Andrew Berg, Luisa Charry, Rafael Portillo, and Jan Vlcek
   Journal of African Economies

   Summary: Many central banks in low-income countries in Sub-Saharan Africa are modernising their monetary policy frameworks. Standard statistical procedures have had limited success in identifying the channels of monetary transmission in such countries. Here we take a case study approach and centre on a significant tightening of monetary policy that took place in 2011 in four members of the East African Community: Kenya, Uganda, Tanzania and Rwanda. We find evidence of the transmission mechanism in most of the countries. Variations across countries can be explained mainly by differences in the policy regime.

Output 2.1 – Country Applications with IMF Country Teams

FPAS framework - no publication under this topic this year.

Diversification - no publication under this topic this year.

DIG/Investment scaling up/Debt sustainability

1. Box 2: Estimating Reform Gains (application of DIGNAR-19 model to Uganda, Article IV)

   Summary: Simulations conducted with the IMF's DIGNAR-19 dynamic general equilibrium model, calibrated to Ugandan data, are leveraged to quantify growth dividends form a reform package. The combined effect of the reform package would yield a medium-term increase in non-oil real GDP growth of 1.8 percentage points. The combined effects of fiscal measures, structural and governance reforms would lift non-oil growth potential to almost 6.5 percent in the medium term, allowing the Ugandan economy to offset the effects of COVID-19 scarring. Under the reform scenario, Uganda would reach a middle-income status by FY2026/27.

2. Application of DIGNAR-19 model to Guinea (Article IV)

   Summary: Growth in Guinea is becoming increasingly concentrated in the mining sector. With almost one third of the world's bauxite reserves, of which a very small amount has been exploited, large reserves of gold, and the world's largest unexploited iron ore deposits, the sector has been growing rapidly since 2016, and the potential remains enormous. FDI in the mining sector has been a key driving force for the economy, and it is expected to accelerate. While there is some potential to move up the value chain—from bauxite to alumina and steel production—the sector currently accounts for less than 6 percent of total employment and contributes less than ¼ of total GDP, with benefits going to a relatively small share of the country. Therefore, energizing the non-mining sector will be critical in developing a more sustainable and inclusive medium-term growth model, which can create jobs and reduce poverty. Furthermore, diversifying the sources of growth away from a narrow set of commodities will also reduce Guinea's vulnerability to exogenous shocks and increasing competition from other market players (e.g., Australia, Indonesia). The IMF's recently developed COVID-19 extension of the DIGNAR demonstrates some of the risks associated with the current growth model, as well as the benefits that could be accrued from pursuing a more diversified growth model.

3. Application of DIGNAR-19 model to The Gambia (Selected Issues)

   Summary: Building infrastructure is a key strategic priority of The Gambian government's National Development Plan. The Gambia's status of infrastructure is broadly at the average of peer SSA countries but is significantly below the level needed to achieve the SDGs in 2030. This analysis estimates that, under current and planned policies, The Gambia's infrastructure gap will reach about 15 percent of GDP in 2030. Strong government's active policies – to improve domestic revenue mobilization, enhance spending efficiency, and attract private investment – could cover about two-thirds of this infrastructure gap. Support from development partners will be important to address the remaining gap. Reliance on borrowing would lead to a significantly higher public debt, in the current context of limited fiscal space.

4. Application of DIGNAR-19 model to Madagascar (Extended Credit Facility)

   Summary: The pace of scaling up set by the government is very ambitious, as public investment in Madagascar suffers from low efficiency and under-execution. In recent years, public investment has been under-executed compared to budget plans, especially for externally financed investment. Over 2020-2021, the estimated needs of public investment to realize the country's ambitious reform agenda summarized in the Plan Emergence

   Madagascar (PEM) are nearly double the projected investment financing under the baseline, at 41 percent vs. 33.5 percent of GDP, respectively. Yet in recent years, budget allocation for public investment has exceeded execution by far, partly reflecting some poor performance in externally financed investment (about two thirds of total public investment), which was planned at 5.5 and 4.6 percent of GDP in the budget laws for 2019 and 2020, but only executed at 4 and 2.7 percent of GDP, respectively. Domestically financed investment stood at only 1.6 and 2.9 percent of GDP in 2019 and 2020, respectively. Identifying and addressing bottlenecks in the efficiency and execution of public investment will be critical to the success of the PEM. A pre-COVID iteration of the IMF Debt-Investment-Growth (DIG) model for Madagascar showed that, holding all else constant, a rise in public investment efficiency to the SSA average could lead to a significant increase in real GDP per capita growth, rising by up to 0.7 percent in 2023 and 0.5 percent each year thereafter compared to the baseline scenario as at end-2019, in addition to boosting private consumption and investment.

Natural disasters/DIGNAD

5. Application of DIGNAD model to Solomon Islands (Selected Issues)

   Summary: This note quantifies additional spending needs for Solomon Islands to achieve key Sustainable Development Goals (SDGs) targets by 2030. The estimate indicates annual additional spending needs of about 6.9 percent of 2030 GDP. Higher investment in energy infrastructure, including on renewable energy, is a key priority to strengthening climate change adaptation and paving the way towards a low-carbon transition. Creating fiscal space for projects with climate-proofing components through budget reallocation, while improving spending efficiency, would raise economic returns by building climate resilience. An integrated financing strategy with a mix of additional concessional financing and front-loaded fiscal measures, including domestic revenue mobilization, is needed and should be properly sequenced to achieve SDGs by 2030. The SDGs and climate commitment should be integrated into the existing PFM reform agenda to achieve climate-sensitive development goals.

6. Samoa: Technical Assistance Report—Climate Macroeconomic Assessment Program (CMAP)

   Summary: Samoa is highly exposed to natural hazards such as tropical cyclones, earthquakes, tsunamis, droughts, and floods. These damage economic growth and impact debt sustainability adversely. Increasing frequency and intensity of coastal storms are likely to amplify damage to infrastructure and livelihoods. Slow-moving climate stresses such as sea level rise and increasing heat hazard are also likely to impact potential growth in the main economic sectors such as agriculture, fisheries, and tourism. The assessment draws on the analysis based on the DIGNAD (Annex I).

7. Selected Issues Paper: [Enhancing Resilience to Climate Change (DIGNAD model application for Uganda)]

   Summary: Uganda is prone to natural disasters that climate change is making more frequent and impactful. Besides the direct damages to lives and livelihoods, the effects of disasters, such as floods and droughts, extend to the wider economy. As recognized by the Third National Development Plan, climate adaptation and preparedness are essential to ensure the resilience of the population and the economy to extreme weather events. Debt-Investment-Growth-Natural-Disasters (DIGNAD) model simulations underscore that building adaptation infrastructure can reduce by two thirds the GDP losses at the trough triggered by a disruptive disaster and almost halve the resulting fiscal gap. Given the financial challenges posed by scaling up adaptation, international support—and scaling up capacity to access donor funds—is required to meet ambitious adaptation plans.

8. Selected Issues Paper: [Building Resilience to Natural Disasters: Growth and Income Distribution Implications of Alternative Government Financing Instruments (Dominica)]

   Summary: Natural disasters disproportionally and recurrently affect small state economies like Dominica. This research develops a multi-sector general equilibrium model and studies the macroeconomic and distributional implications of financing resilience-building using different fiscal instruments. The results indicate that investing in resilience capital is efficient despite its high economic cost, but the financial instrument used to mobilize revenue matters. When building resilience is financed using donors' support or by cutting unproductive government spending, the return of building resilience is higher than when it is financed via distortionary taxes.

Income and Gender Inequality

9. Selected Issues Paper: [Towards More Gender Equality in Kenya]

   Summary: This research analyzes Kenya’s multi-faceted profile of gender inequality and shows, using a general equilibrium model, that greater gender equality would generate substantial macroeconomic and socioeconomic benefits. It discusses several gender gaps in Kenya, including in education, access to health services, employment, earnings, and financial inclusion. It also assesses legal provisions and customary and religious practices that contribute to reinforcing gender gaps. Using a general equilibrium model, several policy options to alleviate gender inequality are studied, including, as a novel contribution, policies that would reduce time spent by women fetching safe water. Amongst studied options, policies aimed at reducing the educational gender gap and discrimination in the informal sector have the largest positive effects. The paper also offers policy advice on how to further increase policy efficiency and ensure that the COVID-19 crisis does not erode too much of the recent gains towards gender equality.

Other - no publication under this topic this year.

Output 2.1.a – Courses Offered to IMF Staff

10. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)

    Summary: This online course, presented by the Institute for Capacity Development and the Research Department, explains how to analyze the relation between public investment, growth, and public debt dynamics using two dynamic structural models: the Debt, Investment, and Growth (DIG) model and the Debt, Investment, Growth and Natural Resources (DIGNAR) model. The course presents and discusses the key pieces of these models (the investment-growth nexus, the fiscal adjustment, and the private sector response) and their interactions, which helps learners understand and assess the macroeconomic effects of public investment scaling-up plans, including on growth and debt dynamics. It elaborates on important factors that may shape these effects such as the type of fiscal financing, the rate of return of public capital, the efficiency of public investment, and the capacity of governments to mobilize revenues. Over the past decade, the DIG and DIGNAR models have gained wide acceptance for policy work. They have complemented the analyses done with the IMF and World Bank Debt Sustainability Framework, with over 65 country applications in the context of Fund-supported programs and surveillance work. They have helped inform policy analysis, based on qualitative and quantitative scenario analyses, on issues not only related to public investment surges but also to fiscal consolidations, cash transfers to poor households, the mix of public current and capital expenditures, the efficiency of public spending and tax administration, and the collapse of commodity prices, among other areas. The course will illustrate some of these applications and explain how to interpret the output of these policy scenario analyses.

11. Course: Macro-Structural Training: Distributional Impact of Policies and Reforms

    Summary: This clinic is one in a series of training clinics on macro-structural issues. The course provides an overview of the IMF's analytical and policy work on inequality and its operationalization in country work. Specifically, it discusses the multifaceted nature of inequality drawing from case studies conducted in the context of surveillance. It then zooms in on the role of fiscal policy—the main tool for redistribution available to the authorities—with a focus on taxes, transfers/social spending, followed by an overview of the latest tools available to Fund economists. Two of the four sessions focus on the two new user-friendly templates produced by Fund staff: (i) a template to assess the distributional incidence of fuel subsidy reform; and (ii) a multi-sector heterogeneous agents model and the associated user-friendly toolkit to analyze the macro and distributional implications of alternative policy reforms (such as revenue mobilization, infrastructure investment, tax consolidation, and measures to counteract possible negative effects such as cash-transfer or universal base income).

12. Course: Clinic on Diversification, Structural Transformation, and Reforms in Developing Economies

    Summary: This clinic is one in a series of training clinics on macro-structural issues. The clinic will provide an overview of IMF analytical and policy work on diversification, structural transformation, and reforms and its operationalization in country work. It will shed more light on the role of diversification in the macroeconomic performance of developing countries by considering diversification not just in trade, but also in the broader domestic economy. Diversification involves significant changes in both the type and quality of goods produced and exported. However, there are major differences across regions and countries in the degree to which they have succeeded in carrying out such economic transformation. Increases in diversification have been associated with lower volatility and higher growth in developing countries. This clinic will also discuss the approach and priorities to help guide the Fund in supporting countries' macrostructural policy needs. Empirical analysis finds a broadly positive relationship between structural reforms and productivity; however, the potential payoff from different reforms varies across income groups. The course will discuss some country cases to reinforce the empirical findings and resonate with historical reform patterns.

13. Course: Clinic on Labor and Product Market Reforms

    Summary: This clinic is one in a series of training clinics on macro-structural issues. Structural reforms are expected to become a growing focus of staff's advice as economies seek to recover from the Covid-19 crisis with limited macroeconomic policy space. High on the list of priorities are labor and product market reforms, particularly in advanced and emerging market economies. The clinic will give an overview of the relevant regulations and institutions, highlighting critical issues in a surveillance context —short-term effects, interactions between reforms, interplay between reforms and macroeconomic conditions and policies, both in general and in the Covid-19 context. The clinic will also review available databases and analytical frameworks (both model-based and empirical, the latter including macro, sectoral, and firm-level analyses) for quantifying the impact of reforms on macroeconomic outcomes. The clinic's overarching goal is to better equip staff with the tools needed to analyze macro-critical labor and product market issues and the effects of reforms in these areas in an IMF surveillance context.

14. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

    Summary: With the support from the FCDO and the Government of Japan, the IMF developed an additional module (on model-based forecasting) for the existing online course on Monetary Policy Analysis and Forecasting (MPAFx), which has been supporting capacity development in low-income countries. The new module has been completed and was included in the February 2022 MPAFx offering.

Output 2.2 – Uptake by Country Authorities

1. FPAS Assistance to Ghana (Virtual Technical Assistance)

   Summary: The IMF-FCDO team continues to support the Bank of Ghana (BoG) in its efforts to build and develop analytical capacity, FPAS processes and organization. In this context, a new virtual FPAS TA (Forecasting and Policy Analysis Systems Technical Assistance) mission was conducted during November 2021. The first part of the mission was dedicated to enhancing short-term forecasting architecture, revisiting and conducting various counterfactual simulations with the Quarterly Projection Model (QPM), and studying the performance of BoG staff historical forecasts. The second part of the mission focused on supporting the BoG staff in using their extended modelling framework to produce the model-based analysis for the November 2021 forecast round. In parallel, the Institute for Capacity Development Department's FPAS TA team is being closely engaged with the BoG modelling team on documenting various components of BoG's FPAS organization, with outputs in the form of User Guides for internal use as well as various external publications, like the prospective IMF Working Paper on Ghana QPM.

Output 2.2.a – Courses Offered to Country Authorities

2. Online Course Delivery: Public Debt, Investment, and Growth: The DIG and DIGNAR Models (DIGx)

   Summary: This online course, presented by the Institute for Capacity Development and the Research Department, explains how to analyze the relation between public investment, growth, and public debt dynamics using two dynamic structural models: the Debt, Investment, and Growth (DIG) model and the Debt, Investment, Growth and Natural Resources (DIGNAR) model. The course presents and discusses the key pieces of these models (the investment-growth nexus, the fiscal adjustment, and the private sector response) and their interactions, which helps learners understand and assess the macroeconomic effects of public investment scaling-up plans, including on growth and debt dynamics. It elaborates on important factors that may shape these effects such as the type of fiscal financing, the rate of return of public capital, the efficiency of public investment, and the capacity of governments to mobilize revenues. Over the past decade, the DIG and DIGNAR models have gained wide acceptance for policy work. They have complemented the analyses done with the IMF and World Bank Debt Sustainability Framework, with over 65 country applications in the context of Fund-supported programs and surveillance work. They have helped inform policy analysis, based on qualitative and quantitative scenario analyses, on issues not only related to public investment surges but also to fiscal consolidations, cash transfers to poor households, the mix of public current and capital expenditures, the efficiency of public spending and tax administration, and the collapse of commodity prices, among other areas. The course will illustrate some of these applications and explain how to interpret the output of these policy scenario analyses.

   In the last run of the course, 146 participants were active on the online platform, of which more than 20 percent were government officials. Both among the general public and among government officials, about half of active participants were from low- or lower-middle-income countries and, among government officials, more than half were from the sub-Saharan African region. The pass rate, among active participants, was 60 percent for the general public and 81 percent for government officials.

3. Presentation to Authorities: Enhancing Resilience to Climate Change in the Maldives

   Summary: The team presented an analysis on climate adaptation to the Maldivian authorities, in the context of the Article IV consultation. The increased likelihood of adverse climate-change-related shocks calls for building resilient infrastructure in the Maldives. Fulfilling these infrastructure needs requires a comprehensive analysis of investment plans, including with respect to their degree of climate resilience, their impact on future economic prospects, and their funding costs and sources. This analysis touches upon these challenges, through calibrating a general equilibrium model (DIGNAD). The main finding is that there is a significant dividend associated with building resilient infrastructure. Under worsened climate conditions, the cumulative output gain from investing in more resilient technologies increases up to a factor of two. However, given the Maldives' limited fiscal space, particularly after COVID-19, the international community should also step-up cooperation efforts. It is also shown that it is financially convenient for donors to help build resilience prior to the occurrence of a natural disasters rather than helping finance the reconstruction ex-post.

4. Course: DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemic in Emerging and Developing Countries at IMF CCAMTAC.

   Summary: A webinar on the DIGNAR-19 model was delivered through the IMF CCAMTAC (capacity development center based in Kazakhstan). The webinar was well attended by the participants including country officials, joining from 13 countries from the region (Caucasus, Central Asia, and Mongolia) including 5 low-income countries—Georgia, Kyrgyz Republic, Mongolia, Tajikistan, and Uzbekistan. The participants showed a high level of satisfaction regarding the effectiveness of presentation and usefulness of the material.

5. Course: Gender equality and macroeconomics (in collaboration with the African Training Institute (ATI) and UN Women) to African country authorities

   Summary: From January 24th to February 3rd, the team was directly involved in a course on gender equality and macroeconomics in collaboration with the Africa Training Institute (ATI) and UN Women. The audience of the course was country authorities from selected African countries.

6. Online Course: Model-Based Monetary Policy Analysis and Forecasting (MPAFx)

   Summary: With the support from the FCDO and the Government of Japan, the IMF developed an additional module (on model-based forecasting) for the existing online course on Monetary Policy Analysis and Forecasting (MPAFx), which has been supporting capacity development in low-income countries. The new module has been completed and was included in the February 2022 MPAFx offering.

Output 3.1 – High-level Policy Conferences Attended by IMF Senior Staff

1. Climate-Related Natural Disasters—Macroeconomic Effects and Policy Responses

   Summary: IMF staff organized a conference, held virtually on June 16, 2021, bringing together policy makers, experts and top-tier academics. The conference was opened with remarks by RES director Gita Gopinath, who introduced a high-level policy panel comprising Managing Director Kristalina Georgieva, Mia Mottley (Prime Minister, Barbados), and Richard Randriamandrato (Minister of Economy and Finance, Madagascar). The panel was conducted as a conversation moderated by Haslinda Amin (Bloomberg Television). Panelists discussed how climate change exacerbates existing vulnerabilities to macro-critical natural disasters, such as droughts, floods, and hurricanes. The benefits of the debt service suspension initiative and other novel forms of debt relief, such as disaster clause provisions in Barbados's public debt, were extensively acknowledged. Two technical sessions covered several topics, encompassing the impact that disasters have on the saturation of the economy with safe assets, the effects of climate change on local sectoral specialization, the role of financial adaptation and monetary policy, and how to include disasters in macro-fiscal frameworks.

2. Supporting Food Security in Sub Saharan Africa Amid the COVID Pandemic and Climate Change

   Summary: Sub-Saharan Africa is highly vulnerable to climate change, with a marked increase in the frequency and intensity of natural disasters threatening food security in the region due to the heavy reliance on rain-fed agriculture, and weak infrastructure and institutions. These challenges are compounded by the adverse effects of the COVID-19 pandemic, which has aggravated food chain disruptions, broadly raised food prices, eroded real incomes, and increased the number of undernourished in the region to reach 264 million in 2020. This discussion comes at a critical time when the IMF is looking to identify viable options to support more vulnerable member countries in their pandemic recovery and achieve resilient and sustainable growth, including through voluntary channeling of some of the SDRs from countries with strong external positions to those most in need.

3. COVID-19 and Fragile States: Promoting Resilient Recovery for the Most Vulnerable Communities

   Summary: This event aimed to take stock of the economic and social impact of COVID-19 in fragile and conflict-affected states (FCS), and identify pathways for progress toward resilient recovery. Speakers will reflect on responses to the pandemic and on opportunities to scale up joint multilateral support in the most fragile settings, where climate risks, food insecurity, and active conflict often overlap. The event will also highlight the Fund's strong commitment to FCS – particularly through the development of an FCS Strategy to further enhance and tailor Fund's support to FCS facing complex and unique challenges.

4. Macroeconomic Fragile States post COVID-19: What Stabilization Policies?

   Summary: A webinar was organized at the Euro-Mediterranean Economists Association to discuss the increased fragility in the Middle East and Africa, particularly in the context of COVID-19. The discussion was based on the book "Macroeconomic Policy in Fragile States"—coedited by Ralph Chami, Raphael Espinoza, and Peter Montiel—that covers the challenges of developing and implementing macroeconomic policy in Fragile and Conflict-

Affected States and provides the backbone to grasp the multifaceted fragility and how to mitigate via analytical frameworks and case studies. The webinar also provided avenues for stabilization policies anchored in fiscal policy, trust, governance and private sector involvement. Discussions on the role of international partners, coordination and solidarity to tackle fragility were also featured.

5. How to Achieve Inclusive Growth

   Summary: Rising inequality and widespread poverty, social unrest and polarization, gender and ethnic disparities, declining social mobility, economic fragility, unbalanced growth due to technology and globalization, and existential danger from climate change are urgent global concerns. These issues are intertwined and require a holistic framework. A new book by the IMF presents a unified plan for combatting these economic and social disparities. The CGD invites you to the launch of this book on How to Achieve Inclusive Growth published by Oxford University Press, followed by a discussion with a distinguished panel.

6. Presentation of “EAC: Challenges to Monetary Policy Space and Transmission” at a seminar during the 2021 Annual Meetings, “Meeting with EAC Ministers of Finance and Central Bank Governors”

   Summary: For a virtual meeting with East African Community (EAC) Ministers of Finance and Central Bank Governors on October 19th during the 2021 Annual Meetings, the MRLIC team collaborated with the IMF African Department and provided input to the presentation on “EAC: Challenges to Monetary Policy Space and Transmission” that took place during this meeting. This high-level event by invitation during the Annual Meetings covered the monetary policy developments since the start of the pandemic and the path going forward for the EAC countries. The discussants to the presentation included Mr. Atingi-Ego (Deputy Governor of the Bank of Uganda) and Mr. Rwangombwa (Governor of the Central Bank of Rwanda). The welcoming and closing remarks were given by Mr. Abebe Aemro Selassie (Director of the IMF’s African Department).

7. IMF-FSB joint Early Warning Exercise: Potential Loss from Human Capital Scarring Due to the Pandemic

   Summary: The pandemic has posed a serious risk to human capital accumulation and may lead to a deep scarring effect on long-term economic outcomes. Such human capital scarring was one of the significant downside risks considered in the confidential Early Warning Exercise, jointly conducted by the IMF and the Financial Stability Board (FSB) and presented to the International Monetary and Financial Committee (IMFC) during the World Bank-IMF 2021 Annual Meetings. As part of the FCDO-IMF research collaboration, the team that examined education losses during the pandemic (April 2021 World Economic Outlook, Chapter 2, Box 2.2) contributed to this Early Warning Exercise by estimating long-term GDP losses from school closures and other pandemic-related disruptions under a downside risk scenario. The analysis indicated a potentially higher scarring effect due to more school closures in low-income countries, contributing to gathering the strong support for low-income countries, in this IMFC meeting.

8. Supporting Fragile and Conflict-Affected States: The IMF FCS Strategy

   Summary: The continuing pandemic poses a significant risk that the divergence between fragile and conflict-affected states (FCS) and the rest of the world will widen—and persist.

As featured in the IMF's chart of the week published on January 21, 2022, an analysis produced as part of the FCDO-IMF research collaboration shows that per capita incomes in FCS will not recover to near their 2019 levels until 2024 based on IMF projections; and by then, the gap with pre-pandemic per capita income trends is set to remain larger for FCS than for other countries. Low-income FCS are particularly at risk to be left behind. The outputs and ongoing workstreams under the FCDO-IMF research collaboration are also featured as existing and forthcoming analytics on FCS in the IMF's newly established comprehensive strategy to strengthen its support to FCS, discussed at the IMF Board Meeting on March 9 with a launching event on March 18.

Output 3.2 – Results of Research Reflected in IMF Policy Papers

Fiscal Monitor/WEO/REO/SDN/Board Presentations

1. October 2021 WEO Box 2.1: Food Insecurity and Prices during COVID-19

   Summary: Nominal global food prices have risen more than 40 percent since the start of the pandemic. The prices of goods sold in a local market—a more relevant indicator, especially if the good is produced domestically (for example, cassava in central and western Africa)—were influenced by numerous local factors, including supply and demand, government policies, exchange rates, transportation costs, and income levels. The dual shock of rising food prices and falling incomes will exacerbate inequality. In low-income countries, where food makes up about 40 percent of the consumption basket, staple food price growth raised consumer price index inflation 5 percentage points. Within countries, the poorest households spend proportionately more on food (people in sub-Saharan Africa with consumption below $2.97 a day spend about 58 percent of their income on food).

2. Staff Climate Note on Macro-Fiscal Implications of Adaptation to Climate Change (joint with FAD)

   Summary: Adaptation to climate change is an integral part of sustainable development and a necessity for advanced and developing economies alike. How can adaptation be planned for and mainstreamed into fiscal policy? Setting up inclusive coordination mechanisms and strengthening legal foundations to incorporate climate change can be a prerequisite. This Note identifies four building blocks: 1. Taking stock of present and future climate risks, identifying knowledge and capacity gaps, and establishing guidance for next steps. 2. Developing adaptation solutions. This block can be guided by extending the IMF three-pillar disaster resilience strategy to address changes in both extreme and average weather and would cover the prevention of risks, the alleviation of residual risks, and macro-fiscal resilience. 3. Mainstreaming these solutions into government operations. This requires strengthening public financial management institutions by factoring climate risks and adaptation plans into budgets and macro-frameworks, and in the management of public investment, assets and liabilities. 4. Providing for transparent evaluations to inform future plans. This involves continually monitoring progress and regularly updating adaptation plans.

3. Board Presentation: The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work

   Summary: IMF staff presented to the IMF Board the findings of an inter-departmental working group established to organize work on the cross-cutting issue of diversification to boost growth, resilience, and job creation in low-income countries. Advice to national policymakers in lower-income countries initially focused on promoting diversification via measures to improve the business environment (horizontal policies), but country authorities have repeatedly posed questions on specific sectoral policies and interventions. The working group therefore sought to examine both the frequency of such interventions (vertical policies) and what policy lessons could be drawn from the examination of the recent literature, surveys of country teams, and country case studies. One conclusion was that horizontal and vertical policies are better viewed more as complements than substitutes: while vertical policies carry risks, particularly in circumstances of weak capacity and vulnerability to policy capture by established firms, there are also a number of cases where a mix of these policies supported substantial diversification over time.

4. October 2021 MCD REO: A fragile recovery continues in the Middle East and Central Asia region.

   Summary: Regional Economic Outlook for the Middle East and Central Asia for October 2021 discusses the pandemic impact on poverty as part of longer-term risks for the region. The report mentions that “about 7 million more people are estimated to have entered extreme poverty during 2020-21 in the region compared to pre-crisis projections,” based on the estimates produced by the MRLIC team.

Output 3.2.a – Results of Papers Reflected in IMF Board Discussions and Papers

Policy Papers discussed by the IMF Executive Board

5. Box in Board Paper. Reaching the Pre-COVID Convergence Path Through the Lens of a Dynamic General Equilibrium Macroeconomic Model [in Macroeconomic Developments and Prospects In Low-Income Countries—2021]

   Summary: This assessment uses a dynamic general equilibrium macroeconomic model to explore the effect of the additional fiscal spending assumed for LICs on their convergence path. The simulation for the average LIC suggests that the path of public investment considered for 2021-25 will lead to an acceleration of growth, compared to the WEO baseline scenario, and be almost sufficient for the average LIC to get back to the pre-COVID convergence path by 2025.

6. Section in Board Paper: The International Monetary Fund's Strategy in Fragile and Conflict-Affected States (FCS)

   Summary: The continuing pandemic poses a significant risk that the divergence between fragile and conflict-affected states (FCS) and the rest of the world will widen—and persist. As featured in the IMF’s chart of the week published on January 21, 2022, an analysis produced as part of the FCDO-IMF research collaboration shows that per capita incomes in FCS will not recover to near their 2019 levels until 2024 based on IMF projections; and by then, the gap with pre-pandemic per capita income trends is set to remain larger for FCS than for other countries. The outputs and ongoing workstreams under the FCDO-IMF research collaboration are also featured as existing and forthcoming analytics on FCS in the IMF’s newly established comprehensive strategy to strengthen its support to FCS, discussed at the IMF Board Meeting on March 9. The per capita income analysis also contributed to an IMF internal brief on FCS and events by the African Department.

Output 4.1 – Commissioned Papers

1. Labor Markets [Chapter 3 of How to Achieve Inclusive Growth]
   Asmaa El-Ganainy, Ekkehard Ernst, Rossana Merola, Richard Rogerson, and Martin Schindler

   Summary: Labor earnings are the dominant income source for most individuals. Thus, an inclusive labor market is key for ensuring inclusive growth. In this chapter we propose four principles that an inclusive labor market will embody: access, fairness, protection and voice. While measuring inclusivity presents challenges, we discuss how data can be used to shed light on the extent of inclusivity and document cross-country trends and stylized facts. We also discuss the role of policy in achieving an inclusive labor market, focusing on the need to rebalance growth; improve risk sharing; and fight discrimination. Several messages emerge. First, some policies entail a trade-off between the different dimensions of inclusivity. Second, it is important to view policies as a bundle, taking into account substitution and complementarities. Third, some policies are win-win, in the sense that they both increase inclusivity and improve overall efficiency.

2. Financial Globalization [Chapter 8 of How to Achieve Inclusive Growth]
   Barry Eichengreen, Balazs Csonto, and Asmaa El-Ganainy

   Summary: This chapter reviews the academic and policy debate on the association between financial globalization and inequality. The evidence suggests that the distributional impact of financial globalization is context-specific and different types of flows have different distributional implications, though the consensus points to unequalizing effects of capital account liberalization. The overall impact thus depends on the composition of flows, their interaction, as well as on the broader economic and institutional conditions. A comprehensive set of policies, including macroeconomic and financial sector policies, and labor and product markets, is important to enable wider sharing of the benefits of financial globalization.

Output 4.2 – Toolkits

1. DIGNAD

   Summary: DIGNAD is a structural dynamic general equilibrium framework to assess quantitatively the macroeconomic effects of natural disasters and associated policy trade-offs in small natural disaster-prone states with a focus on growth and debt, based on Marto, Papageorgiou and Klyuev (2018). The model can be used to evaluate the outcomes of climate-related natural disasters (on macroeconomic variables such as GDP and debt) conditional on a set of ex-ante and ex-post adaptation policies. The model can be calibrated to match country-specific data moments (e.g., the annual return on both standard infrastructure investment and adaptation infrastructure investment). The DIGNAD model has been already used as part of many Article IV Surveillances (e.g., the Solomon Islands, the Maldives, St. Lucia) and is currently being integrated in a capacity development program (Climate Macroeconomic Assessment Program, CMAP).

2. IAPOC Toolkit – An Assessment Toolkit for Monetary Policy Frameworks

   Summary: The toolkit provides a multidimensional characterization of monetary policy frameworks (MPFs) consisting of three pillars: Independence and Accountability, Policy and Operational Strategy, and Communications (IAPOC). The IAPOC index captures the soundness of MPFs and challenges the existing paradigm of monetary policy regime classifications. We construct the index for 50 advanced economies, emerging markets, and low-income developing countries, over the period 2007-2018 based on the systematic analysis of central banks' laws and websites. The series enables gauging the great diversity in MPFs, particularly among developing economies and in countries that have reached for a mix of tools in pursuit of multiple objectives.

   The toolkit has now disseminated to the IMF staff, with a launching event on May 19, 2022. Ad hoc consultations on MPFs using on this toolkit have been conducted with the IMF country teams, including the following low-income countries: Georgia, Kyrgyz Republic, Kenya, Rwanda, Tanzania, and Uganda.

Output 4.3 – Attendance of External Researchers at High-Level Policy Conferences

1. Presentation of "How to Boost the Post-COVID-19 Recovery? Policy Lessons from Country Applications of the DIGNAR Model" at Villa Mondragone International Economic Seminar in July 2021.
2. Food insecurity in Low-Income Countries at a seminar organized by IMF and the World Food Programme in February 2022.
3. Presentation of "Network Bottlenecks and Market Power" at Society for Economic Dynamics in July 2021.
4. Presentation on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at the 23rd INFER Annual Conference in September 2021.
5. Presentation on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at Southern Economic Association Conference in November 2021.
6. Poster session on "The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia" at Allied Social Science Associations (ASSA) Annual Conference in January 2022.
7. Presentation on "Search Externalities in Firm-to-Firm Trade" at University of Bonn in September 2021.
8. Presentation on "Search Externalities in Firm-to-Firm Trade" at STEG conference in January 2022.
9. Presentation on "Search Externalities in Firm-to-Firm Trade" at CSAE conference, University of Oxford in March 2022.
10. Keynote Speech: Will the AI Revolution Cause a Great Divergence? At The 2nd Applied Macroeconomics Forum in December 2021.
11. Presentation on "Structural Reforms and Elections: Evidence from a World-Wide New Dataset" at NBER Summer Institute in July 2021.
12. Presentation on LDC economic development and challenges at UN LDC Conference in November 2021.
13. Presentation at the webinar "Macroeconomics of Climate Change" at Africa Training Institute in April 2021.
14. Presentation on Epidemics, Gender, and Human Capital in Developing Countries at an AFRITAC event - "Gender Equality and Macroeconomics: Lessons from East Africa and Beyond" in December 2021.
15. Presentation on "Monetary Policy Frameworks: An Index and New Evidence" at BIS in March 2022.
16. Presentation on the results of the macro-fiscal section of Samoa's CMAP mission to the acting Minister of Finance as well as the management of the Ministry of Finance in March 2022.

Outcome Indicator 1 – Thematic areas of IMF policy influenced and made LIC-specific

1. Food insecurity and food inflation—see the paragraph in Section 2 for detail.
2. Climate change and debt sustainability—see the paragraph in Section 2 for detail.

Other Outputs

E-newsletters

1. June 2021 Newsletter
2. September 2021 Newsletter
3. December 2021 Newsletter
4. March 2022 Newsletter

Blogs/Article/Press/Other

1. IMF Blog: Fragile and Conflict-Affected Economies Are Falling Further Behind
2. VOXEU Blog: Defying the odds: Remittances held up during the COVID-19 pandemic
3. VOXEU: Blog Investigating the Drivers of Remittance Fees
4. GlobalDev Blog: Public investment for growth: a country's absorptive capacity is key
5. IMF Podcast: Island States Paying Price for Climate Change
6. F&D: Intergenerational Social Mobility in Africa
7. DIGNAR-19 Toolkit Manual

8. Note: "Spillovers from the War in Ukraine to Low-income Countries" (bilaterally shared with FCDO)
   Cedric Okou, John Spray, Filiz Unsal, and Roland Kpodar

   Summary: The most important channels through which the war in Ukraine may affect low-income countries (LICs) are its impacts on global food and oil prices and financial linkages. Considering cereals make up two-thirds of the daily caloric intake in LICs and is primarily imported, an increase in global cereal prices may intensify food insecurity concerns. Increases in global wheat prices could bring almost one-to-one increase in local wheat prices, and by itself could result in a 3-5 percent increase in the cost of the consumption basket in many LICs, with a substantially larger impact in countries with high wheat consumption shares and import dependence. LICs could also be affected from oil price spikes as fear of sanctions on Russian exports escalates, and from tightened external financing conditions brought by uncertainty and financial sanctions. These forces are likely to be compounded by the limited policy space in most LICs following the pandemic.

9. Internal daily newsletters: "Headlines on LICs"

   Summary: As the COVID -19 crisis unfolded across the globe in March 2020, we started to circulate a daily email within the team that has the latest articles on COVID-19 and LICs. The idea was to keep our team informed on the latest developments related to COVID-19 in LICs, such as the level of infections, vaccine deployments, and related government policies. It was then expanded to also cover any emerging topics that are important to LICs, such as Ukraine-Russia war, food crisis, inflation, climate change, inequality, gender, etc. The daily email provides a list of headlines with weblinks under each topic from the press, think tanks, academic, civil society, and multilateral organizations, gathered by automated alerts and manual search, and then filtered by judgment by the team member in charge. The newsletter has received positive feedback, and recently, we received a request from the IMF's African Department to add their senior staff and the Regional Studies Division (the team charge of the Regional Economic Outlook for sub-Saharan Africa) in the distribution list. So far, the email has been circulated to about 100 Fund staff.

Internal Presentations (Fund-wide or across Departments)

1. Presentation on “Trade and the COVID-19 pandemic: lessons from French firms” at Surveillance meeting in November 2021.
2. Presentation on “The Role of Targeted Interventions to Support Growth and Diversification in Developing Countries: Recent Staff Work” at Diversification Working Group Seminar in February 2022.
3. Presentation on “Food insecurity in SSA” at RES-AFR joint IMF seminar on February 16, 2022.
4. Presentation on “Food Prices in Sub-Saharan Africa: An Empirical Assessment” at AFR-RES joint IMF seminar on March 31, 2022.