Annual Review

Title: Macroeconomics Research in Low-Income Countries (MRLIC)		
Programme Value £ (full life): £19,835,983		**Review date:** July 2021
Programme Code: 202960	**AMP start date:** Feb 2012	**AMP end date:** Mar 2025

Summary of Programme Performance

Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Overall Output Score	A++	A++	A++	A++	A++	A++	A+	A+	A+
Risk Rating	Low	Low	Low	Low	Low	Minor	Minor	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 stability is critical for economic growth. Low-income countries (LICs) are particularly vulnerable to shocks that cause periods of macroeconomic instability, low growth, and deeper poverty. However, academic macroeconomic research is often hard to relate to policy and not much covers the specific circumstances and challenges faced by LICs.

Macroeconomic Research in Low Income Countries (MRLIC) is a long-standing strategic partnership between FCDO and the International Monetary Fund (IMF) which seeks to address these issues. FCDO is providing £19.8m over 13 years to the IMF to undertake and utilise research into critical macroeconomic issues affecting LICs. The IMF has deep expertise in policy-relevant macroeconomics and is a critical channel of policy advice in LICs. Deeper understanding of LICs will improve IMF advice to country governments – an important and influential route for setting macroeconomic policy in the countries where FCDO works.

The aim of MRLIC is that "*Better macroeconomic policy-making in LICs leads to faster economic growth, job creation and poverty reduction in LICs*". This is delivered through four outputs (i) producing high quality, policy relevant research on LIC macroeconomic issues, (ii) ensuring that research products are used by IMF country teams and partner authorities, (iii) shaping high-level IMF policy positions and strengthening engagement by senior IMF policymakers on LIC issues, and (iv) expanding the network of researchers and policymakers working on LIC macroeconomics.

MRLIC's research is conducted by IMF staff and external academics. It focuses on five areas:

- 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).

This year, the Covid-19 pandemic also led MRLIC to focus on understanding the effects of the pandemic in LICs and advising on the macroeconomic policy responses.

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 (RES), the Strategy, Policy and Review Department (SPR) and the Institute for Capacity Development (ICD) helps ensure that the research agenda is relevant to the Fund's policy activities and is disseminated across Fund operations.

The programme began in March 2012, was extended twice in 2014 and in 2016. A fourth phase (£5.1m) was approved in 2019. This Annual Review covers the first year of the fourth phase. Following the reduction in FCDO funding, a no-cost programme extension was approved in 2021, bringing the end date to March 2025.

Summary supporting narrative for the overall score in this review

This Annual Review scores an A+. The review covers April 2020 to March 2021. During this time, the Covid-19 pandemic caused major macroeconomic shocks across LICs, requiring urgent analytic support from MRLIC. Key achievements include demonstrating the value of earlier investments into research and toolkits by quickly adapting them to respond to the crisis; advising the IMF Board on the effects of the pandemic in LICs; and further institutionalising MRLIC tools within the Fund through online training courses, all while maintaining a strong research pipeline. At the output level, two outputs score an A+ and two an A. See Section C for details. Highlights at output level include:

- MRLIC **research track record** continues to be strong. This year a greater-than-expected number of working papers and publications in peer-reviewed journals were published, exploring themes such as commodity price shocks, debt policy and monetary policy frameworks. MRLIC also released a synthesis paper that was presented to the IMF Board. (See Output 1.)

- Despite the pandemic and freeze on travel, there was a strong **take up of research products by IMF country teams and partner governments**. This included some country applications, for instance the use of the debt model to the Nigeria Article IV review, or virtual technical assistance with the Central Bank of Ghana, but also the dissemination of Covid-19 notes providing practical guidance on the unfolding crisis, for instance advice on how central banks should communicate to promote stability. MRLIC research formed the basis of several online courses, as part of a trend moving away from ad hoc applications and towards the mainstreaming of MRLIC tools into IMF economic practice. (See Output 2.)

- MRLIC **successfully influenced high-level decision making at the IMF Board** on LICs issues notably through two Board Papers: a Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities, which explained how to address debt in the context of Covid-19, and the MRLIC flagship publication on Macroeconomic Developments and Prospects in Low-Income Developing Countries (LIDCs), which estimated that LIDCs need $200 billion up to 2025 for the response to the Covid-19 pandemic. The programme continues to enjoy the support from senior staff at the IMF, as evidenced for example by the Managing Director and Chief Economist's engagement in events. (See Output 3.)

Major lessons and recommendations for the year ahead

Through research, toolkits, policy papers, and conferences, MRLIC effectively shaped the IMF's understanding how Covid-19 affects LIC economies and how different macro policy levers can be used in response, thus demonstrating the policy-relevance of earlier investments. Responding to the pandemic has led to a shift in gears from long-term research towards advising on urgent issues. There is a need to move ahead with the advisory committee to support prioritisation. Finally, it has become even more important to consider diversifying the sources of funding for MRLIC. The reduction in the budget available from the FCDO means that while research staff and the pipeline of research is maintained, is a shortfall in funding available for research uptake activities.

Recommendations:

- To assure the sustainability of MRLIC, the IMF team should leverage the programme's strong brand to raise funding for MRLIC from within the Fund, as well as work towards developing an indicator to track the level of IMF resources committed to LIC issues.
- FCDO and the IMF should move ahead on instating the advisory committee for the programme and convening the committee before the next review.

- While the IMF provides a strong account of activities, there could be a greater emphasis on explaining the outcomes and impacts of the programme, in particular clarifying how the research has changed the IMF’s approach and where it has influenced policies in countries.

- IMF and FCDO should revise the logframe to account for the pandemic and budget changes.

- Bringing in new or external researchers to do macroeconomic research on LICs issues has been a challenge, FCDO and IMF should explore the feasibility of different options.

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[1] is summarised below:

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.

The ToC remains valid. A decision was taken to partner directly with the IMF to maximise the early engagement of potential users of the research and ensure that the research agenda was shaped by demand for policy advice. The IMF's role in policymaking in LICs is often crucial, they monitor macroeconomic developments and, where IMF financial programmes are in place, have a uniquely influential position on policy. However, LICs do not present a systemic challenge to the *global* financial system and would be unlikely to be sufficiently covered by IMF research without FCDO support. By increasing IMF engagement with LIC-specific issues, the ultimate impact is improved macroeconomic policy in LICs, which results in real-world benefits of economic growth and reduced poverty.

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 has met the expected outcome: *Evidence of improved IMF policymaking and integration of LIC-specifics in project thematic areas*. Much of the detail is contained in Section C. The key thematic areas where the outcome was achieved in 2020/21 were:

- **Informing and shaping the IMF's response to COVID-19 in LICs**. This was done through internal guidance notes, applications in countries, and an IMF Board Paper examining the financing needs of LICs. The IMF Chief Economist 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*"

- **Advising on debt 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)

[1] 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.

model and other related models[2], for instance the launch of online course on the DIG model to fully embed MRLIC tools in IMF's economic practice, the adaptation of the DIGNAR model to the pandemic (DIGNAR-19), applications of these models to advise on debt policy in Nigeria. MRLIC also presented IMF Board Paper on the Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities. IMF Deputy Management Director stated "*In this ongoing effort [to respond to the pandemic] the FCDO-IMF partnership has been very instrumental, by narrowing the important gap in research needed in formulating sound macroeconomic policies in low-income countries. For example, recent country applications of a newly developed model, DIGNAR-19, to analyze debt-investment-growth nexus tailored to the COVID-19 situation, have helped assess much needed fiscal space under the highly uncertain environment*."

- **Finally, while the central outcomes of the programme are about shaping IMF policy, it is worth noting the growing academic impact and footprint of MRLIC's publications**. This year the MRLIC team continued to track citations and the use of research outputs. Data shows a continuous strong uptake of MRLIC research. From 193 products there are more than 1,742 citations (up from 1,403 last year). The analysis shows that 77% of publications have been cited, with an average citation of 11 per article cited (ten citations is a recognised benchmark). 83% of the citations are non-self (i.e. no connection to the IMF or MRLIC programme).

While it is clear that MRLIC research has been very influential in informing the IMF's view of key macroeconomic issues relevant to LICs, it would be good to be more specific when describing the outcomes. In particular but threre needs to be clearer evidence of shaping IMFs approach and then how this has translated to outcomes at country level. including discussing outcomes at country level, to describe in detail what has changed as a result of the research.

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

The programme should continue. The MRLIC programme generates **critical research on macroeconomic issues affecting LICs** that would otherwise not be sufficiently funded. In turn, the research, toolkits, training and analyses produced by the programme serve to improve how the IMF engages in LICs as well as 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 achieved impacts for instance by improving decision-making on public investment and debt sustainability or on how to conduct monetary policy.

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 demonstrated the UK's global leadership on LICs. The MRLIC research programme helps deliver significant 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 PRO provides regular updates to UKDEL and IFID on upcoming MRLIC research, Board papers and policy work.

Over time, FCDO research funds and long-term investment have successfully built up the MRLIC "brand" within the Fund, which means **MRLIC can increasingly leverage other IMF funds.** For instance, IMF country teams occasionally buy-in analysis from MRLIC team members and the programme is working on securing funding from the IMF's Institute for Capacity Development (ICD). The programme should continue to expand and diversify its funding sources and track the IMF resources being committed to LIC issues.

The programme'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.

[2] These models include: Debt-Investment-Growth (DIG), Debt-Investment-Growth and Natural Resources (DIGNAR), DIG-Labour, which integrates segmented labour markets, and now the DIGNAR-19, which models Covid-19 related policy responses.

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 cost to the FCDO.

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**	**2021**
1.1 Number of priority research papers 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 2021: H (150 papers) M (145 papers) L (140 papers)	150 cumulative (21 in 2020/21) *Met high target*
1.2 Number of research papers accepted for publication in appropriate high-quality peer-reviewed journals	By March 2021: H (83 papers) M (79 papers) L (75 paper)	83 (13 in 2020/21) *Met high target*
1.3 Number of published books, where either (a) the book or (b) all the substantial content is freely available	By March 2021: 2 books	2 cumulative (0[3] in 2020/21) *Met*
1.4 Number of meetings of programme advisory group (cumulative)	By March 2021: 1 meeting	0 *Not met, in progress*

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

This output scores A+. Two output indicators met the high target, one indicator met the medium target (though with no additional output expected or produced this year), however a new output target on launching an advisory committee was not met. Despite the missed indicator, the excellent performance – in terms of quantity, quality and breadth – on the core research production indicators mean that the fundamental purpose of this output was achieved.

Indicator 1.1: Working papers (WPs)
MRLIC produced 21 WPs in the past year[4], bringing the total to 150 over the programme to date. This meets the high target. IMF WPs are high quality[5] and go through a strict quality assurance process within the Fund. This year MRLIC also released a synthesis piece summarising MRLIC progress over the past eight years (Box p.6). A full list of WPs produced is in Annex A, below are a few examples to give a flavour of the type of research produced.

- A paper showing that **regional trade integration in Africa** promotes economic growth, however, it fosters income divergence, reflecting the distribution of the gains in favour of the

[3] One book was published: Macroeconomic Policy in Fragile States. However, the content is not freely available and therefore it is not counted in this indicator.
[4] Four of the WPs (# 9, 10, 11, 21 in the list in Annex A) were produced in the reporting year (i.e. they had been internally reviewed, finalised, and sent for posting on the IMF website) but not yet published.
[5] 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. Equivalent ranking in 2019 was 20. https://ideas.repec.org/top/top.wpseries.all.html

more developed economies. This suggests supporting the **African Continental Free Trade Area** (AfCFTA) with policies aimed at reducing non-tariff barriers to trade and improving infrastructure to maximize the growth effects for all participating countries.

- Analysis of the role of **monetary policy frameworks** in the propagation of shocks in 79 LICs, including which finds highly significant differences in the propagation of external shocks between the LICs that target monetary aggregates or inflation compared to those that maintain rigid nominal exchange rates as a nominal anchor. The paper also analyses the effects the large surprise devaluation of the Central African Franc (CFA) in January 1994, which had highly significant effects on the GDP growth of 10 CFA countries (Benin, Burkina Faso, Cameroon, CAR, Chad, Cote d'Ivoire, Mali, Niger, Senegal, and Togo) relative to non-CFA countries.

- A model of the trade-off in building **resilient infrastructure** against natural disasters between ex-ante and ex-post approaches, calibrated for six small countries (Antigua and Barbuda, Dominica, Fiji, Haiti, St. Lucia, and St. Vincent and the Grenadines) that are highly vulnerable to natural disasters. The results suggest that policy makers can save by investing in ex-ante resilience and avoiding large recovery costs.

- Analysing the impact of **food price shocks** on socio-political instability and whether fiscal policy or remittances can have a protective effect. While remittances dampen the adverse effect of import food price shocks on instability in almost all countries, the mitigating role of fiscal policy is significant only in countries with low levels of private credit.

Synthesizing Progress & Findings: Macroeconomic Research in Low-income Countries: Advances Made in Five Key Areas Through a DFID-IMF Collaboration (Ahir et al). This is a synthesis of progress over the first eight years of the MRLIC collaboration, across five key policy areas of debt management, monetary policy, gender, income inequality and diversification. It underscores the role of research focused on LICs in improving policy outcomes, and also raised challenges such as climate change, high levels of public debt burdens, and persistent structural issues. Selected highlights below:

- **Debt policy**: one of the programme's flagship projects was the development of debt model adapted to the policy needs of LIC's for large public investments to support growth that does not jeopardise debt sustainability. The Debt-Investment-Growth (DIG) model and its different extensions are widely used in country.
- **Monetary policy**: This has been a particularly impactful area of work, with MLRIC research substantially changing the IMF's view and engagement in LICs on monetary policy. One takeaway: many LICs have made progress in modernising monetary policy frameworks towards forward-looking frameworks and away from reserve money targeting. When changes are taking place, it is harder to quantify monetary transmission mechanisms. This research suggests that monetary transmission may be stronger than previously thought in LICs, with implications for policy design.
- **Gender:** this agenda has focused on the barriers preventing women from achieving their economic potential and has pioneered gender-budgeting in the IMF. The synthesis highlights the political and legal pre-requisites of successful gender budgeting.

The synthesis was **widely disseminated** through IMF web pages and social media, as well as circulated to the relevant IMF Executive Directors. Authors were invited by an IMF Executive Director to give a **presentation to the IMF Board**. The IMF Executive Directors praised the work and asked for more frequent briefings on the findings of key future research projects.

Indicator 1.2: Peer-reviewed published papers

This year MRLIC had 13 papers accepted for publication in peer-reviewed journals, bringing the total over the life of the programme to 83, meeting the high target. The papers published in the past year cover all five MRLIC themes, and broad range of macroeconomic topics relevant to LICs, from energy policy to labour markets, from the predictors of banking crises in LICs, to a review of the evidence of the relevance of gender equality for macroeconomic outcomes. Summaries of papers published this year are in Annex A, below are a few examples to give a flavour of the breadth of LIC research.

- To pass (or not to pass) through international fuel price changes to domestic fuel prices in developing countries: What are the drivers? Energy Policy
- Designing Labor Market Institutions in Emerging Market and Developing Economies: A Review of Evidence and IMF Policy Advice, Comparative Economic Studies

- Tropical cyclones and post-disaster reconstruction of public infrastructure in developing countries. Economic Modelling
- Gender equality and macroeconomic outcomes: evidence and policy implications, Oxford Review of Economic Policy

Indicator 1.3: Book publications
One book was published this year: Macroeconomic Policy in Fragile States (Oxford University Press). However, it is not freely available and so does not count towards this indicator. The target (2) was already met. The book comprises 20 chapters by experts in the design and practice of macroeconomic policy in fragile countries and is aimed at practitioners. The content of the book helped develop training modules for IMF economists, in particular to strengthen their capacity in policymaking in fragile states during the Covid-19 pandemic.

Indicator 1.4: Meetings of programme advisory group
The IMF MRLIC team have put together a comprehensive proposal to form an advisory committee and circulated this with FCDO. The proposal includes a panel containing senior academics and policymakers, as well as the terms of the reference of the advisory committee. There was some delay in confirming the committee members and convening an initial meeting, this is largely due to waiting for confirmation of availability on FCDO-side.

Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year

VfM metrics under this output 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.

Table 1: Cost per Working and Published Paper

Total Staff/Contractual/VS Costs[1]	$15,448,193
Research Paper Costs	$11,586,145
Country Applications Costs	$3,862,048
Working Papers	176
Produced	150
Commissioned	26
Cost Per Working Paper	**$65,830**
Published Papers	90
Produced	83
Commissioned	7
Cost per Published Paper	$128,735

The cost per working paper is also approximately $66,000, down from $69,000 in the previous year. The average cost per published paper is approximately $129,000 (£93,000). This is lower than the FCDO benchmark of $215,000 (£156,000) per paper and has also been reducing over time (it is down from $139,000 reported 2020[6]). To some extent, this reflects the time lags involved in research publication – costs borne earlier in the programme yielding publications this year – but it is also a confirmation of that MRLIC is efficiently publishing research outputs at a low cost. The quality of research outputs is also high. The total number of publications reached 83 for the eight years, including in highly ranked journals such as Economic Journal, Journal of International Economics, Oxford Review of Economic Policy and Journal of Mathematical Economics, among others. MRLIC research is also presented at top academic conferences such as the annual meetings of the Allied Social Science Associations (ASSA) and the NBER Summer Institute.

[6] The currency conversion is based on the exchange rate as of 1st July 2021

Describe any changes to this output during the past year, and any planned changes as a result of this review.

The phase 4 logframe targets had been carefully calibrated taking into account performance in previous years. Reflecting on the difficulty in making books publicly available, indicator 1.3 should be removed going forward. If chapters from already published books become freely available as working papers, they should be counted under output indicator 1.2.

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

Recommendation:

- MRLIC to move forward with the advisory committee.

Progress on previous recommendations from previous AR:

Recommendation	Progress
Discuss how to track the quality of published outputs (possibly proxied by the quality of journals) as well as the quantity.	In progress. This year the programme has published in some highly ranked journals, and quality overall had been good.
Ensure that recent important (but mainly internal) work on covid-19 is turned into useful, high-quality papers and publications where possible.	Some of the Covid-19 work has had influence in the public sphere through conferences or high-profile policy papers, for instance on the financing needs of LICs (see output 3), while another paper was published in a academic journal[7]. That said, some of the quick response analysis and policy advice – for instance in the internal Covid-19 notes – is not necessarily suitable for publication even though it remains a highly valuable channel of MRLIC impact to support the pandemic response.
Ensure that synthesis products produced in phase 3 but delayed by covid-19 are published and publicised.	Done. See Box p.6.
Examine how books (in particular) can be made freely available.	The indicator on books will be removed. Instead, MRLIC research that is published in a book (and where the content is freely available) will be counted under Output 1.1. or 1.2. depending on the level of peer-review.

- [7] Manoj Atolia, Chris Papageorgiou and Stephen J. Turnovsky Re-opening after the lockdown: Long-run aggregate and distributional consequences of COVID-19. *Journal of Mathematical Economics.* Volume 93, March 2021, 102481

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 previous AR	Progress
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 2021, evidence of number of country teams applying policy tools and frameworks: H (129) M (125) L (121) *Of which*, courses offered to IMF staff H (4) M (3) L (2)	115 cumulative (17 in 2019/20) *Exceeded high target*	129 cumulative (14 in 2020/21) *Met high target* 2.1.a. 3 cumulative *Met medium target*
2.2 Application and use of tools and frameworks by **country authorities.**	By March 2021, evidence of number of country authorities applying policy tools and frameworks: H (52) M (49) L (46)	46 cumulative (8 in 2019/20) *Met high target*	54 cumulative (8 in 2020/21) *Exceeded high target*
Of which: Sub-indicator 2.2.a. Courses offered to country authorities	Courses offered to country authorities H (24) M (22) L (20)	20 (4 in 2019/20) *Met high target*	25 cumulative (5 in 2020/21) *Exceeded high target*

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

This output scores an A+. Output indicator 2.1 met the high target, with sub-indicator 2.1.a. meeting the medium target. Output Indicator 2.2. and sub-indicator 2.2.a both exceed the high target. Despite the freeze on travel, MRLIC has continued to demonstrate strong engagement with IMF country teams and LICs governments, in particular to support the Covid-19 economic response.

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 129, meeting the high target. The country applications usually consist of (i) research being used in analysis that produces policy papers in country such as Article IV reports, selected issues papers etc. and ii) training courses. The pause on travel and the Covid-19 crisis reduced opportunities for some applications in country, as Article IV reports were often postponed. However, MRLIC provided substantive online training courses, and pivoted to reach country teams by using internal notes. This year, applications by IMF country teams included:

i. ***Country applications.*** MRLIC research on the debt-investment-growth and natural resources models was used to provide analytical input to Article IV consultations in Nigeria and to a "Selected Issues" paper showing that the COVID-19 resurgence would take a heavy toll on the Nigerian economy, with GDP contracting by 1.7% and debt levels rising significantly. The programme also developed a Technical Note and Manual showing how macroeconomic frameworks can be used to evaluate the implications from the policies adopted to mitigate COVID-19, using applications in Colombia and Cambodia. The MRLIC has also actively been engaging with IMF country teams in Kenya (on income inequality & schooling), Sao Tome & Principe (tax reforms) and Mozambique (on financing climate-resilient infrastructure) but this work is not yet finalized in official documents.

ii. ***Internal Notes***[8]**.** To effectively deal with the high volume of requests from country desks, MRLIC put together a series of eight internal notes to help IMF country teams formulate policy advice to governments. The notes provide practical analytic tools to address the economic effects of Covid-19. For example, one note details a model for macro policy assessment in LICs that incorporates the shocks and channels related to the pandemic, like health containment measures, another provides advice on central bank communication during Covid-19. Summaries of all eight notes are in the Annex B. All internal notes were presented at Fund-wide virtual seminars and contributed to policy discussions internally.

iii. ***Courses for IMF country teams (sub-indicator 2.1.a).*** MRLIC work has 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 mainstreamed as part of economic practice at the Fund. Last year three courses were offered to IMF staff:

- *Training course on Public Debt, Investment, Growth – the DIG and DIGNAR Models (DIGx):* MRILC launched a new online course on the IMF Training Portal Public Debt, Investment, and Growth. The DIG and DIGNAR Models. The course explains how to analyse the relation between public investment, growth, and public debt dynamics, using two flagship models developed by MRLIC research.

- *Training course on Macroeconomic Policy in Fragile and Conflict-Affected States* (FCAS): Experts provided an online series on macro policy in FCAS, consisting of eight in-depth modules. The course targeted IMF desk economists and mission chiefs working on FCAS, with a focus on tools, policy design, and implementation challenges.

- *Seminar on Macroeconomic Consequences of Remittances in LMICs and Fragile and Conflict Affected States* summarising the growing literature on the macroeconomic impact of these private income flows in recipient countries, policy implications for LMICs and Fragile States and Fund policy advice, especially in light of the unfolding COVID-19 crisis.

Indicator 2.2: Applications by country authorities

Similarly, there were three incidences of MRLIC toolkits and frameworks being used by, and five training courses delivered to, policymakers in-country thus reaching a milestone of eight applications for country authorities, meeting the cumulative high target (46). This year, in-person visits were not possible, however the MRLIC team continued to collaborate closely with the Bank of Ghana (BoG) 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—in July and September 2020 and March 2021.

Training is a key channel to induce uptake of MRLIC products by IMF country teams and country authorities. Five training courses were open to government officials:

1. Public Debt, Investment, and Growth. The DIG and DIGNAR Models (DIGx)
2. Are the Remittance Flows Another Casualty of COVID-19? at Joint Vienna Institute
3. Are the Remittance Flows Another Casualty of COVID-19? at Singapore Training Institute
4. Macroeconomic Policy in Fragile States at Africa Training Institute
5. Fragile States post COVID-19: What Stabilization Policies? At Euro-Mediterranean Economists Association

Assess the VfM of this output compared to the proposition in the Business Case, based on performance over the past year

There are no VfM metrics specifically relating to this output in the Business Case. Nonetheless this output contains an important mechanism for ensuring VfM within this programme. On *efficiency*, the

[8] Due to the sensitivity of the topic, only some of these notes have been published on the external site: https://www.imf.org/en/Publications/SPROLLs/covid19-special-notes and in some case, the note could make it into a working paper.

use of research products by IMF country teams and partner authorities is critical to improving macro advice to LICs (by IMF staff) and macro policymaking (by country governments).

Describe any changes to this output during the past year, and any planned changes as a result of this review.

The targets for engagement in country has been reduced to reflect the impact of Covid-19 as the pandemic led to country teams delaying macroeconomic surveillance processes such as Article IV reviews, which are the typical process though which MRLIC research is taken up at country level.

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

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.

Progress on recommendations from the previous AR:

Recommendation	**Progress**
Work out how to assess (either through ongoing monitoring or through the Annual Reporting process) the usefulness of training delivered in-country.	In progress. Courses offered on the IMFx online course platform can show detailed statistics on attendance, completion and knowledge. The programme should continue to work on understanding the usefulness of courses available to country authorities.

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 previous AR	Progress
3.1 High level policy conferences attended by senior IMF staff reflect findings of research papers funded under this project.	By March 2021, number of policy conferences drawing on outputs from the project: H (45) M (43) L (41)	40 (4 in 2019/20) *Met high target*	42 (2 in 2020/21) *Met low 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 2021: H (48) M (45) L (42) By March 2021: H (25) M (23) L (21)	41 (5 in 2019/20) 20 (2 in 2019/20) *Met high target*	49 (8 in 2020/21) *Exceeded high target* 22 (2 in 2020/21) *Met low target*

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

This output scores an A. Indicator 3.1. meets the low target and indicator 3.2. exceeds the high target (while sub-indicator 3.2.a just meets the low target). IMF MRLIC research has been influential at the highest levels in setting direction policy direction for LICs during the pandemic. As a result of the crisis, there have been an unprecedented number of requests for IMF programmes[9] needing to be considered by the IMF Board, and it was not optimal for teams to multiply demands on the Board. Instead, there was more of a focus on getting only the highest impact research to be discussed by Executive Directors at the Board. This included critical issues on debt and financing the response to the pandemic. As the programme continues to enjoy support from IMF leadership, there is a need to track how much this interest translates into additional Fund resources being devoted to LIC-issues.

Indicator 3.1: High level conferences
MRLIC research was presented and discussed at two high profile conferences in the past year, bringing the cumulative total to 42, above the low target (41).

- Covid-19 Pandemic in Developing Countries: Conference on the Covid-19 impacts in developing countries, with high level panels of top-level officials and experts discussing economic policy to work through the pandemic e.g., fiscal policy, how to manage debt, how to address food insecurity and inequality, governance. Including IMF Chief Economist, IMF Managing Director, FCDO Chief Economist, Minister of Economy of Senegal, Governor of Central Bank of Kenya, Governor of State Bank of Pakistan, as well as top academic economists and civil society representatives.

- Monetary Policy and Inequality: COVID-19 and Beyond. Jointly organised by the Peterson Institute for International Economics (PIIE) and the IMF, a series of panels bringing together high calibre academics, policy leaders from central banks and finance ministries and IMF experts to discuss the links between financial and monetary policy and inequality in the context of the Covid-19 pandemic.

Indicator 3.2. Research reflected in IMF Board discussion and other IMF policy papers.

[9] IMF programmes combine packages of policy reform, agreed between the country government and the Fund, with balance of payments support to countries facing (or at risk of) an economic crisis,

MRLIC research was reflected in total in eight high profile policy papers, exceeding the cumulative high target. This includes MRLIC research informing two IMF Board papers this year (meeting the low cumulative target for sub-indicator 3.2.a.), but also three other Board presentations[10].

The IMF Executive Board discussed and approved two key papers put forward by MRLIC.

- In December 2020 the IMF Board discussed a paper on the Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities which explained how to implement this approach in low-income developing countries and emerging markets in the context of Covid-19.

- In March 2021 the Board discussed a paper on Macroeconomic Developments and Prospects in Low-Income Developing Countries (LIDCs). This is the IMF's annual analytical product specifically focused on LIDCs. This year it focused on financing needs of LIDCs, estimating that LIDCs need $200 billion up to 2025 for the response to the Covid-19 pandemic and to rebuild their buffers, and an additional $250 billion to help them grow and converge towards advanced economies (to avoid a "Great Divergence").

MRLIC research was presented at the Board:

1. The COVID-19 Crisis and Low-Income Developing Countries: Impact, Policy Response and Policy Tradeoffs
2. Board presentation for Africa's Constituency: Departmental Paper - "Macroeconomic Research in Low-Income Countries: Advances Made In Five Key Areas Through A DFID-IMF Collaboration"
3. Briefing on the Outlook for Latin America and the Caribbean

MRLIC research was reflected in IMF flagship external publications: World Economic Outlook (WEO) and the Regional Economic Outlook (REO) for Africa.

4. WEO Box: Inclusiveness in Emerging Market and Developing Economies and the Impact of COVID-19
5. WEO Box: Box 2.2. Education Losses during the Pandemic and the Role of Infrastructure
6. REO Chapter: Adapting to Climate Change in Sub-Saharan Africa

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 programme effectively leaned into providing timely economic advice during the Covid-19 crisis and continues to enjoy support from seniors at the IMF. We should expect to see this engagement translate into additional internal resources being committed to LIC research, including through this programme. In a context of budgetary tightening on UK ODA, this becomes even more important for the sustainability of the programme.

Recommendations:

- 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.

- The output indicators and the annual report describe important engagement in the Fund however 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.

Progress on recommendations from previous AR:

Recommendation	**Progress**

[10] 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 publicized and discussed by IMF senior management and the Executive Directors.

Ensure that MRLIC work maintains a strong pipeline of opportunities to be discussed at the highest levels in the IMF (Board, etc.).	Done. The programme presented two influential papers on Covid-19 and Debt at the Board this year.

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 previous AR	Progress
4.1 Number of commissioned research papers from researchers produced on thematic areas[11].	By March 2021, number of commissioned research papers produced: H (33) M (31) L (30)	30 cumulative (4 in 2019/20) *Met medium target*	32 (2) *Met medium target*
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 2021, number of produced: H (12) M (11) L (10)	9 (0 in 2019/20)	11 (2 in 2020/21) *Met medium target*
4.3 Attendance of external researchers and policy makers at high-level policy conferences.	By March 2021, number of high-level policy conferences attended by external researchers: H (138) M (134) L (130)	124 (16 in 2019/20) *Exceeded high target*	139 15 in 2020/21 *Exceeded high targeted*
4.3 Project Outputs disseminated in e-newsletter and up-dated public web-page and R4D (FCDO web portal). Number of updates of e-newsletter and/or web-page:	By March 2021, number of up-dates: H (34) M (32) L (31)	30 (4 in 2019/20) *Met high target*	34 (4) *Met high target*

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, and another met the high target. The programme continues to face challenges in terms of increasing the participation of external academics (see discussion under 4.1) which means the target for 4.1 had been reduced. There was good coverage of MRLIC research at external conferences thanks to a smooth pivot to virtual events (this is why the target, which had been lowered due to the pandemic, was largely exceeded), as well as satisfactory dissemination of the newsletter. This is in line, rather than exceeding, expectations. Going forward MRLIC should continue to grapple with the challenge of how to bring in externals into the field.

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. Originally, this indicator was about expanding the field of macroeconomists working on LICs issues, and therefore used to require the external researchers to be "new" in the sense of not having worked on LIC issues before. However, this requirement was dropped in the latest logframe review because this approach was not cost-effective[12]. The programme still aims to commission external pieces: this is necessary to produce high quality work across the breadth of MRLIC thematic areas, as well as to raise the profile of macroeconomic research on LICs. This year, three pieces were commissioned externally, including by top academics already working on development

[11] These papers are also included under Output Indicators 1.1 for total working papers, and, if appropriate, indicator 1.2. (publications). Output 3.1. is focused on incentivising some external commissioning.
[12] Trying to commission LIC-focused macro research from externals new to the field proved both (a) expensive – as the programme sought to commission pieces from respected academic with a track record of rigorous research, and (b) also required significant monitoring and control as these researchers' incentives were to continue working on papers closer to their usual, non-LIC focus.

research. One of these pieces is general macroeconomic research and is not squarely within the MRLIC themes. This meets the medium target, although targets for this indicator had been substantially reduced.

1. Finance, Growth, and Inequality by Ross Levine
2. Is Regional Trade Integration a Growth and Convergence Engine in Africa? Vigninou Gammadigbe
3. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions. Daron Acemoglu and Alireza Tahbaz-Salehi[13]

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 further produced one adaptation on the DIGNAR toolkit, as well as a new database and toolkit of structural reforms:

- MRLIC developed an adaptation of the DIGNAR-19 toolkit adapted to the Covid-19 to help departments conduct quantitative macroeconomic assessments and policy scenario analysis.

- MRLIC also launched a Structural Reform Database and associate web toolkit. The database provides a complete set of indicators on structural policies over 40 years (1973-2014) for 90 countries with various development levels. The IMF Data website tool includes interactive charts and tables, as well as "Dividends Toolkit" that allows us to compute potential growth gains from structural reforms to close the gap relative a benchmark level.

The development of policy relevant toolkits is a strength of this programme. This indicator should be moved to Output 1 as it is part of the research and knowledge production process.

Indicator 4.2: Attendance at conferences
This year MRLIC research was presented at 15 high-level policy and academic conferences. This includes prestigious academic conferences for instance at the National Bureau of Economics (NBER) conference, or at Annual Meeting of the American Economic Association (ASSA) as well as presentations at the World Bank or IMF. The cumulative total is 139, above the high target, however the number of conferences last year (15) is in line with the annual average for this output (16). Given the possibility to organize virtual events, this indicator has met expectations.

Indicator 4.3: Project outputs disseminated
MRLIC research updates and events continued to be disseminated in a quarterly newsletter, while this technically meets the high target, the quarterly newsletter has been a standard feature of this programme for several years and performance is in line with expectations. The newsletters are distributed to a broad network of over 1500 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. MRLIC research was also occasionally featured in IMF Blogs as well as picked up in the wider press.

- IMF Blog: "How COVID-19 Will Increase Inequality in Emerging Markets and Developing Economies".
- Quartz: "The pandemic has inequality rising in poor countries".
- CNN: "As Covid-19 rages on, countries need to support migrant workers".
- IMF Blog: "COVID-19: Without Help, Low-Income Developing Countries Risk a Lost Decade
- World Economic Forum: "How COVID-19 will increase inequality in emerging markets and developing economies

Describe any changes to this output during the past year, and any planned changes as a result of this review.

As noted above, the scope of output indicator 4.1. was expanded in the last logframe review, and the targets for some outputs had been reduced due to the anticipated impact of Covid-19. Overall, this output should be revised, not only adjusting targets to ensure they are sufficiently stretching, but also to make sure the indicators are adequately capturing the wider footprint of MRLIC research in terms of

[13] This is a high-quality macroeconomics paper; however the coverage is broad and it is not specific to LIC policy issues. While there is an argument that any additional advances in our understanding of macroeconomic shocks will be relevant to all countries, the intention of MRLIC is to focus on where there is a gap.

expanding the field and dissemination. This should include indicators to drive the inclusion of LIC-based researchers into the programme.

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

Despite the good level of dissemination activities, it has been harder to achieve this output's vision of expanding the field of researchers working on macroeconomic research focused on LICs. Previous attempts at commissioning research from established academics to bring them in have not proven cost-effective, so the programme should think creatively about how to achieve this external engagement. It would be beneficial to increase engagement researchers based in LICs, not only due to the researchers' local context expertise but also because of potential links to macroeconomic policy making. Another approach to expand the field of research by concentrating on new entrants such as PhD students.

Recommendations:

- Revision of the logframe indicators under this output to ensure they capture the most important aspects of expanding the field of researchers.

- FCDO and IMF should continue to explore the ways to bring in external expertise into the programme. This includes convening an advisory committee and continuing to engage externals through commissioned papers and conferences. The IMF should scope ways to increase engagement from LIC-based researchers notably in the research production process.

Progress on recommendations from previous AR:

Recommendation	**Progress**
Continue to refine the process for engaging and commissioning work from external researchers in order to meet the programme target of expanding the field of economists working on macro in LICs.	In progress: FCDO and IMF decided the best ways to engage external researchers was through conferences or the advisory committee, as well as some commissioning. Indicator 4.1 was adjusted to drop the requirement for the commissioned researchers to be "new". The programme should continue to work on other options to expand the field including focus on researchers from LICs and early career researchers.

D: RISK

Overview of risk management

The overall risk rating for this project remains Minor. The Covid-19 pandemic has 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. The reduction in funding available for travel, events and uptake, represents a more important risk to the delivery of the programme. Mitigations include continuing to use cheaper tools for uptake – online training courses, online visits – and securing additional funding from other IMF departments (Institute for Capacity Development) or other donors to complement FCDO 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 global 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.

This project continues to be highly cost effective, owing to solid governance on the procurement process together with the high-quality work by the team. It follows all Fund guidelines for hiring, travel, and conferences. Contractual employees undergo a competitive process before being hired. Outputs are produced under firm timeframes and must meet Fund requirements for publication. The quality of papers is further evaluated when they are submitted to peer-reviewed publications.

As shown in Table 2, direct project management costs represent approximately one percent of the total budget. Including the Trust Fund management fee, program management costs are around eight percent. This means that 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 extremely accurate and reliable in its cost estimates

Table 2: Breakdown of project expenditure in Years 1-9

HQ led missions including entire mission team	30%
Short-term Advisors - CD delivery	2%
Research HQ based/Visiting Scholars	36%
Seminars & Study Tours	7%
Project Backstopping	14%
Project Management	1%
Exceptional Expenses	2%
Language Services	0%
Trust Fund Fee	7%

The FCDO and IMF work closely together to monitor delivery of the programme. 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 that has been important in delivering key macroeconomic research workstreams.

This Annual Review process was conducted by the FCOD 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[14]

[14] Included as an annex of the IMF Annual Report. Available on the IMF Partners Connect website

Annex A – Publications

Output Indicator 1.1 – Working Papers

Topic 1. Modelling and understanding policy choices

1. Do Monetary Policy Frameworks Matter in Low Income Countries? **Alina Carare, Carlos de Resende, Andrew T. Levin, and Chelsea Zhang**. In recent years, many Low-Income Countries (LICs) have implemented substantial reforms to their monetary policy frameworks, but existing economic research has not provided a clear rationale to guide those efforts. In this paper we analyze the role of monetary policy frameworks in the propagation of aggregate shocks, using a large panel dataset of 79 LICs over the period 1990-2015 as well as event study analysis for a group of 28 sub-Saharan African LICs. We find highly significant differences in the propagation of external shocks between the LICs that target monetary aggregates or inflation compared to those that maintain rigid nominal exchange rates as a nominal anchor. We also find that the large surprise devaluation of the Central African Franc (CFA) in January 1994 had highly significant effects on the GDP growth of 10 CFA countries compared to 18 similar countries that were outside the CFA zone. Our empirical analysis provides strong support for the role of monetary policy frameworks in facilitating macroeconomic stability in LICs—a conclusion that is particularly relevant as LICs now face a multitude of similar shocks associated with the global COVID-19 pandemic.

2. Quarterly Projection Model for the National Bank of Rwanda. **Jan Vlcek, Mikhail Pranovich, Patrick Hitayezu, Bruno Mwenese, and Christian Nyalihama.** National Bank of Rwanda (BNR) modernized monetary policy and transited to the price-based policy framework in January 2019. The Forecasting and Policy Analysis System (FPAS) is the cornerstone for the new forward-looking framework, which mobilizes and organizes resources and sets processes for regular forecasting rounds. The core of this system is a structural macroeconomic model for macroeconomic analysis and projections to support the BNR staff's policy recommendations to the monetary policy committee. This paper documents the quarterly projection model (QPM) at the core of the FPAS at the BNR. The model is an extension of the canonical structure in Berg et al (2006) to reflect specifics of the interest-rate-based policy framework with a managed exchange rate, the effect of agricultural sector and harvests on prices, and the role of fiscal policies and aid flows.

3. Public Investment over the Fiscal Cycle. ***Chapter 6 in Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment?*** **Edited by Gerd Schwartz, Manal Fouad, Torben Hansen and Genevieve Verdier, pp. 85-105. Tannous Kass-Hanna Kangni Kpodar and Dawit Tessema**. In this paper, Tannous Kass-Hanna, Kangni Kpodar, and Dawit Tessema investigate the growth dividends to developing countries of shifting public spending composition towards public investment during fiscal cycles. Using general equilibrium and empirical models, the study shows that protecting investment spending during consolidations – although contractionary in the short-term – boosts medium- to long-term growth. The growth benefits are particularly large when the initial public investment ratio is low. Increasing the share of public investment in total government spending from 10 to 20 percent raises medium-term growth by 0.5 percentage points. These results hold both during good times (when consolidations are observed) and bad times (when consolidations are warranted).

4. To Pass (or Not to Pass) Through International Fuel Price Changes to Domestic Fuel Prices in Developing Countries: What Are the Drivers? **Kangni R Kpodar and Patrick A. Imam**. While many developing countries limit the international fuel price pass through to domestic fuel prices, others do not. Against this backdrop, we examine the factors that determine whether governments allow international fuel price changes to be passed through to domestic prices in developing countries using a dataset spanning 109 developing countries from 2000 to 2014. The paper finds that the pass-through is higher when changes in international prices are moderate and less volatile. In addition, the flexibility of the pricing mechanism allows for higher pass-through while exchange rate depreciation and lower retail fuel prices in neighboring countries inhibit it. The econometric results also underscore the fact that countries with inflation tend to experience lower pass-through, whereas those with high public debt exhibit larger pass-through. Finally, no evidence is found that political variables or environmental policies matter with regard to fuel price dynamics in the short-

term. These findings, which are consistent across fuel products (gasoline, diesel and kerosene), allow us to draw important policy lessons for fuel subsidy reforms.

5. **Imported Food Price Shocks and Socio-Political Instability: Do Fiscal Policy and Remittances Matter?** **Carine Meyimdjui**. Using a panel of 101 low- and middle-income countries with data covering the period 1980-2012, this paper applies various econometric approaches that deal with endogeneity issues to assess the impact of food price shocks on socio-political instability once fiscal policy and remittances have been accounted for. It focuses on import prices to reflect the vulnerability of importer countries / net-buyer households to food price shocks. The paper finds that import food price shocks strongly increase the likelihood of socio-political instability. This effect is greater in countries with lower levels of private credit and income per capita. On the other hand, while remittances seem to dampen the adverse effect of import food price shocks on socio-political instability in almost all countries, the mitigating role of fiscal policy is significant only in countries with low-levels of private credit.

6. **Food Price Shocks and Household Consumption in Developing Countries: The Role of Fiscal Policy. Carine Meyimdjui and Jean-Louis Combes**. This paper studies whether fiscal policy plays a stabilizing role in the context of import food price shocks. More precisely, the paper assesses whether fiscal policy dampens the adverse effect of import food price shocks on household consumption. Based on a panel of 70 low and middle-income countries over the period 1980-2012, the paper finds that import price shocks negatively and significantly affect household consumption, but this effect appears to be mitigated by discretionary government consumption, notably through government subsidies and transfers. The results are particularly robust for African countries and countries with less flexible exchange rate regimes.

7. **Building Back Better: How Big Are Green Spending Multipliers? Nicoletta Batini, Mario di Serio, Matteo Fragetta, Giovanni Melina, and Anthony Waldron**. This paper provides estimates of output multipliers for spending in clean energy and biodiversity conservation, as well as for spending on non-ecofriendly energy and land use activities. Using a new international dataset, 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. Although not all green and non-ecofriendly expenditures in the dataset are strictly comparable due to data limitations, estimated multipliers associated with spending on renewable and fossil fuel energy investment are comparable, and the former (1.1-1.5) are larger than the latter (0.5-0.6) with over 90 percent probability. These findings survive several robustness checks and lend support to bottom-up analyses arguing that stabilizing climate and reversing biodiversity loss are not at odds with continuing economic advances.

8. **Delays in Public Investment Projects. Raphael Espinoza and Andrea Presbitero**. The returns from public investment, especially during periods of scaling up, are often lower than expected. To understand the mechanisms behind this regularity we exploit original information on investment projects obtained from World Bank project reports to document the extent and the drivers of time delays in project implementation. We find that almost 60 percent of investment projects are delayed by at least one year. Time overruns are common across sectors and countries. A sound planning and preparation matter for the timing of project execution. Country characteristics also play a role, as projects undertaken in countries with weaker institutions and in periods of public investment scaling up are completed with longer delays.

9. **Monetary Policy Frameworks: An Index and New Evidence. Chris Papageorgiou, D. Filiz Unsal and Hendre Garbers. *Forthcoming IMF Working Paper*.** The paper provides a multidimensional characterization of monetary policy frameworks (MPFs) consisting of four pillars: Independence and Accountability, Policy Strategy, Operational Strategy, and Communications. The IAPOC index captures the soundness of MPFs and challenges the existing paradigm of monetary policy regime classifications. We construct the index for 35 developing and developed economies 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.

10. **IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems (FPAS): Taking Stock. ICD-MCM Joint Departmental Paper. *Forthcoming IMF Working Paper*.** This paper takes stock of FPAS capacity development (CD), drawing extensively on the experience and lessons learned from developing FPAS capacity in LIC 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 practice within the Fund 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.

11. **An Open Economy Quarterly Projection Model for Malawi. Yaroslav Hul, Grant P. Kabango, Kisukyabo Simwaka, Austin Chiumia, Wytone Jombo, Marietta Mpingasa, and Shalva Mkhatrishvili. *Forthcoming IMF Working Paper*.** Modeling a macro-economy of a developing nation is a difficult undertaking. Compared to advanced economies where key macroeconomic stylized facts are well-documented and time series data is abundant and consistent, understanding the workings of the economy in a developing country is a challenge, given often scarce research and limited macroeconomic data. That is why a semi-structural model, known for its flexibility, can be an extremely useful addition to a central bank's modeling toolkit. The so-called Quarterly Projection Model (QPM) helps organize policy analysis in a central bank in a systematic way and generate an internally coherent policy path consistent with medium-term developments of macroeconomy and monetary policy objectives. This paper – joint with the Reserve Bank of Malawi (RBM) -- documents QPM at the core of the Forecasting and policy Analysis System (FPAS) at the RBM. The model is built and calibrated to reflect a number of Malawi-specific stylized facts, including the importance of agricultural sector for GDP and its effect on domestic food prices, the effects of central bank credibility, and the characteristics of interest-rate-based monetary policy in the presence of fiscal pressures.

Topic 2. Understanding macro-financial linkages

No publication under this output this year.

Topic 3. Building resilience

12. **Building Resilience to Natural Disaster in Vulnerable States: Savings from Ex Ante Interventions. Chapter 9 in *Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment?*, edited by Gerd Schwartz, Manal Fouad, Torben Hansen and Genevieve Verdier, pp. 154-171 Wei Guo and Saad Quayyum**. In this research Wei Guo and Saad Quayyum assess the trade-off in building resilient infrastructure against natural disasters between exante and ex-post approaches. The authors use dynamic and general equilibrium and empirical models and calibrate their structural model to six small countries that are highly vulnerable to natural disasters. The results suggest that policy makers can save in net present value terms by investing in ex-ante resilience and avoiding large recovery costs. In addition, increasing the elasticity of output to infrastructure by improving governance would also leads to sizable output gains from the baseline. The finding underscores the importance of mobilizing more resources to build resilient infrastructure against natural disaster and climate change.

13. **Enhancing Resilience to Climate Change in the Maldives. Giovanni Melina and Marika Santoro**. 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 paper analyzes these challenges, through calibrating a general equilibrium model. 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. We also show 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.

Topic 4. Promoting structural change and institutional development

14. **Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions. Daron Acemoglu and Alireza Tahbaz-Salehi.** This paper studies how firm failures and the resulting disruptions to supply chains can amplify negative shocks. We develop a non-competitive model where customized supplier-customer relations increase productivity, and the relationship-specific surplus generated between firms and their suppliers is divided via bargaining. Changes in productivity alter the distribution of surplus throughout the economy and determine which firms are at the margin of failure. A firm's failure may spread to its suppliers and customers and to firms in other parts of the production network. We provide existence, uniqueness, and a series of comparative statics results, and show how the response of the equilibrium production network may propagate recessionary shocks.

15. **Will the AI Revolution Cause a Great Divergence? Cristian Alonso, Andrew Berg, Siddharth Kothari, Chris Papageorgiou and Sidra Rehman.** This paper considers the implications for developing countries of a new wave of technological change that substitutes pervasively for labor. It makes simple and plausible assumptions: the AI revolution can be modeled as an increase in productivity of a distinct type of capital that substitutes closely with labor; and the only fundamental difference between the advanced and developing country is the level of TFP. This set-up is minimalist, but 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. In addition, capital—if internationally mobile—is pulled "uphill", resulting in a transitional GDP decline in the developing country. In an extended model where robots substitute only for unskilled labor, the terms of trade, and hence GDP, may decline permanently for the country relatively well-endowed in unskilled labor.

16. **Is Regional Trade Integration a Growth and Convergence Engine in Africa? Vigninou Gammadigbe**. The main objective of Regional Trade Agreements (RTAs) is to stimulate economic growth in participating countries through increased trade, economies of scale, knowledge and technology transfer. Using a panel data over the period 1979 to 2018, this paper examines the contribution of regional trade integration (RTI) to economic growth and income convergence in Africa and its major Regional Economic Communities (RECs). The results of the instrumental variable and panel fixed-effects estimation show that RTI promotes economic growth in Africa. However, it fosters income divergence, reflecting the distribution of the gains from regional integration in favor of the more developed economies of the continent. The results of this study show the importance to support the African Continental Free Trade Area (AfCFTA) project with policies aimed at reducing non-tariff barriers to trade and improving infrastructure in order to maximize the effects on growth in all participating countries.

17. **Socio-Economic Spillovers from Special Economic Zones: Evidence from Cambodia. Mariya Brussevich.** This study examines the socio-economic impact of special economic zones (SEZs) in Cambodia---a prominent place-based policy established in 2005. The paper employs a database on existing and future SEZs in Cambodia with matched household surveys at the district level and documents stylized facts on SEZs in a low-income country setting. To identify causal effects of the SEZ program, the paper (i) constructs an alternative control group including future SEZ program participants and districts adjacent to SEZ hosts; and (ii) employs a propensity score weighting technique. The study finds that entry of SEZs disproportionately benefits female workers and leads to a decline of income inequality at a district level. However, the findings also suggest that land values in SEZ districts tend to rise while wage levels remain largely unchanged relative to other districts. In addition, the paper tests for socio-economic spillovers to surrounding areas and for agglomeration effects associated with clusters of multiple SEZs.

18. **Search Externalities in Firm-to-Firm Trade. John Spray**. I develop a model of firm-to-firm search and matching to show that the impact of falling trade costs on firm sourcing decisions and consumer welfare depends on the relative size of search externalities in domestic and international markets. These externalities can be positive if firms share information about potential matches, or negative

if the market is congested. Using unique firm-to-firm transaction-level data from Uganda, I document empirical evidence consistent with positive externalities in international markets and negative externalities in domestic markets. I then build a dynamic quantitative version of the model and show that, in Uganda, a 25% reduction in trade costs led to a 3.7% increase in consumer welfare, 12% of which was due to search externalities.

Topic 5. Enhancing inclusion

19. **Re-Opening After the Lockdown: Long-run Aggregate and Distributional Consequences of COVID-19. Manoj Atolia, Chris Papageorgiou and Stephen J. Turnovsky.** COVID-19 has dealt a devastating blow to productivity and economic growth. We employ a general equilibrium framework with heterogeneous agents to identify the tradeoffs involved in restoring the economy to its pre- COVID-19 state. Several tradeoffs, both over time, and between key economic variables, are identified, with the feasible speed of successful re-opening being constrained by the transmission of the infection. In particular, while more rapid opening up of the economy will reduce short-run aggregate output losses, it will cause larger long-run output losses, which potentially may be quite substantial if the opening is overly rapid and the virus is not eradicated. More rapid opening of the economy mitigates the increases in both long-run wealth and income inequality, thus highlighting a direct conflict between the adverse effects on aggregate output and its distributional consequences.

20. **Macroeconomic Research in Low-income Countries: Advances Made in Five Key Areas Through a DFID-IMF Collaboration. Hites Ahir, Hendre Garbers, Mattia Coppo, Giovanni Melina, Futoshi Narita, Filiz D Unsal, Vivian Malta, Xin Tang, Daniel Gurara, Luis-Felipe Zanna, Linda G. Venable, Kangni R Kpodar and Chris Papageorgiou.** Despite strong economic growth since 2000, many low-income countries (LICs) still face numerous macroeconomic challenges, even prior to the COVID-19 pandemic. Despite the deceleration in real GDP growth during the 2008 global financial crisis, LICs on average saw 4.5 percent of real GDP growth during 2000 to 2014, making progress in economic convergence toward higher-income countries. However, the commodity price collapse in 2014–15 hit many commodity-exporting LICs and highlighted their vulnerabilities due to the limited extent of economic diversification. Furthermore, LICs are currently facing a crisis like no other—COVID-19, which requires careful policymaking to save lives and livelihoods in LICs, informed by policy debate and thoughtful research tailored to the COVID-19 situation. There are also other challenges beyond COVID-19, such as climate change, high levels of public debt burdens, and persistent structural issues.

21. **Finance, Growth, and Inequality. Ross Levine. *Forthcoming IMF Working Paper.*** Finance and growth emerged as a distinct field of economics during the last three decades as economists integrated the fields of finance and economic growth and then explored the ramifications of the functioning of financial systems on economic growth, income distribution. This paper reviews theoretical and empirical research on the connections between the operation of the financial system and economic growth and inequality. While subject to ample qualifications, the preponderance of evidence suggests that (1) financial development—both the development of banks and stock markets—spurs economic growth and (2) better functioning financial systems foster growth primarily by improving resource allocation and technological change, not by increasing saving rates. Research also suggests that financial development expands economic opportunities and tightens income distribution, primarily by boosting the incomes of the poor. This work implies that financial development fosters growth by expanding opportunities. Finally, and more tentatively, financial innovation—improvements in the ability of financial systems to ameliorate information and transaction costs—may be necessary for sustaining growth

Output indicator 1.2 – Peer-reviewed published papers

Topic 1. Modelling and understanding policy choices

- Kangni Kpodar, Patrick Amir Imam, To pass (or not to pass) through international fuel price changes to domestic fuel prices in developing countries: What are the drivers? *Energy Policy Vol 149, February 2021, 11999*

- Kpodar K. , Stefania Fabrizio S., Eklou K. (2021) "Export Growth - Fuel Price Nexus in Developing Countries: Real or False Concern?", *Energy Journal*, Vol. 43, No 3. Export Growth -
- Romain Duval & Prakash Loungani, 2021. "Designing Labor Market Institutions in Emerging Market and Developing Economies: A Review of Evidence and IMF Policy Advice," Comparative Economic Studies, Palgrave Macmillan; Association for Comparative Economic Studies, vol. 63(1), pages 31-83, March
- Espinoza, Raphael and Presbitero, Andrea, Delays in Public Investment Projects (January 7, 2021). *International Economics, forthcoming*
- Gurara, Daniel & Kpodar, Kangni & Presbitero, Andrea F. & Tessema, Dawit, 2021. "On the capacity to absorb public investment: How much is too much?," World Development, Elsevier, vol. 145(C).

Topic 2. Understanding macro-financial linkages

- Markus Eberhardt & Andrea F Presbitero, 2018. "Commodity Price Movements and Banking Crises," IMF Working Papers 2018/153. *Journal of International Economics, forthcoming*

Topic 3. Building resilience

- Christopher Adam, David Bevan, Tropical cyclones and post-disaster reconstruction of public infrastructure in developing countries. *Economic Modelling, Vol 93, December 2020, Pages 82-89*

Topic 4. Promoting structural change and institutional development

- Gokmen, Gunes; Nannicini, Tommaso; Onorato, Massimiliano Gaetano; Papageorgiou, Chris (2020): Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms, IZA Discussion Papers, No. 12932, Institute of Labor Economics (IZA), *Economic Journal, forthcoming*
- Furceri, Davide & Hannan, Swarnali A. & Ostry, Jonathan D. & Rose, Andrew K., 2020. "Are tariffs bad for growth? Yes, say five decades of data from 150 countries," Journal of Policy Modeling, Elsevier, vol. 42(4), pages 850-859
- Jedwab, Remi & Loungani, Prakash & Yezer, Anthony, 2021. "Comparing cities in developed and developing countries: Population, land area, building height and crowding," Regional Science and Urban Economics, Elsevier, vol. 86(C).

Topic 5. Enhancing inclusion

- Patrick Amir Imam and Kangni Kpodar. Does an Inclusive Citizenship Law Promote Economic Development? *Review of Law & Economics 2021 17(1): 35-69*
- Lisa Kolovich, Vivian Malta, Monique Newiak, David Robinson, Gender equality and macroeconomic outcomes: evidence and policy implications, *Oxford Review of Economic Policy*, Volume 36, Issue 4, Winter 2020, Pages 743–759
- Manoj Atolia, Chris Papageorgiou and Stephen J. Turnovsky Re-opening after the lockdown: Long-run aggregate and distributional consequences of COVID-19. *Journal of Mathematical Economics.* Volume 93, March 2021, 102481

Output indicator 4.1 – Commissioned papers

4. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions. Daron Acemoglu and Alireza Tahbaz-Salehi

5. Finance, Growth, and Inequality. Ross Levine *Forthcoming IMF Working Paper*

6. Is Regional Trade Integration a Growth and Convergence Engine in Africa? Vigninou Gammadigbe

Annex B – IMF Board papers, policy papers and presentations

Output 3.2 – Results of papers reflected in IMF Board discussions and papers

Papers discussed by the IMF Executive Board

1. Update on the Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities

Summary: Amid rising debt risks in low-income developing countries and emerging markets, the IMF and the WB have been implementing a multipronged approach (MPA) to address debt vulnerabilities. Amplification of debt risks owing to COVID-19 has upped the urgency to implement the MPA and highlights the importance of debt sustainability and transparency for long-term financing for development. At the same time, it should be noted that countries have limited capacities which are further stretched by COVID-19 and that implementation of the MPA by itself may not be sufficient to address debt vulnerabilities and risks from global economic shocks.

2. Macroeconomic Developments and Prospects In Low-Income Countries—2021

Summary: This paper is the sixth in a series that examines macroeconomic developments and prospects in low-income countries (LICs). LICs are defined in this report as the countries eligible to PRGT facilities (69 countries). The first section of the paper discusses recent macroeconomic developments and trends across LICs. The second section estimates LICs' financing needs up to 2025 to resume and accelerate their income convergence with advanced economies (AEs). It does this by estimating the additional financing that would enable LICs to step up spending response to COVID, including vaccination needs, while rebuilding or keeping external buffers to enhance resilience, and then the paper considers the financing needed to allow LICs to accelerate convergence with AEs. The paper then discusses a mix of financing options, including concessional financing from the international financial institutions, grants and loans from bilateral donors, private financing and debt operations, but also domestic reforms within LICs themselves as a key component to foster growth, enhance private investment, raise public revenues, and increase efficiency of spending.

3. **Output 3.2.a – Results of papers reflected in IMF policy papers**

Fiscal Monitor/WEO/REO/SDN

1. REO Chapter: Adapting to Climate Change in Sub-Saharan Africa

Summary: Sub-Saharan Africa is especially vulnerable to climate change, as it relies heavily on rain-fed agriculture and has limited resilience and coping mechanisms. On average, climate change could reduce GDP growth by at least 1 percentage point in the month a climate shock occurs. Improving access to finance and insurance, education, health, telecommunications, and physical infrastructure would be most effective in raising resilience. Ensuring food security and raising agricultural productivity in the face of intensifying weather shocks will require targeted social assistance, crop diversification, and improved irrigation. While these measures involve large public spending, they should be prioritized as they will be more cost-effective than frequent disaster relief. Limited fiscal space poses a challenge and means that development partners' support will be critical.

2. WEO Box: Inclusiveness in Emerging Market and Developing Economies and the Impact of COVID-19

Summary: Gabriela Cugat and Futoshi Narita conducted a research that documents the possible implications of the pandemic for poverty reduction, improvements in life expectancy, and progress toward greater equality in emerging market and developing economies. The number of people in extreme poverty is likely to rise substantially this year, for the first time in more than 20 years, and income inequality, on average, across these economies could rise back to levels seen in 2008, reversing gains since the global financial crisis. Life expectancy is less likely to be affected, although there are downside risks related to the fragile state of health care systems and interruptions in treatments of other lifethreatening illnesses. This research has been published as a box in the October 2020 World Economic Outlook, and featured in the IMF Blog, Quartz Magazine, and the World Economic Forum.

3. WEO Box: Box 2.2. Education Losses during the Pandemic and the Role of Infrastructure

Summary: School closures and other pandemic-related disruptions pose a serious risk to human capital accumulation across the world. Early evidence shows that education losses were larger in economies with preexisting gaps in infrastructure (such as access to electricity and internet), which constrained their ability to effectively implement remote learning programs. Remedial measures are essential to prevent the scarring effect on human capital stock, which would lead to further economic divergence. This calls for urgent policy action as well as international support for low-income countries and many emerging market economies with limited infrastructure and inadequate educational funding.

4. Board presentation: The COVID-19 Crisis and Low-Income Developing Countries: Impact, Policy Response and Policy Tradeoffs

Summary: On July 22, IMF staff gave a Board presentation on the COVID-19 policy response and policy tradeoffs in the context of low-income developing countries (LIDCs). The research shed light on developments in LIDCs, which account for one-fifth of the world population but for only about 4½ percent of global GDP and do not always receive full consideration in analyses of the global economy. At the same time, LIDCs are being hit hard by the COVID-19 crisis, suffering an unprecedented external shock and having to combat the fallout with very limited resources and policy instruments. The presentation argued that countries with limited policy space should front-load containment measures—to flatten the infection curve as much as possible and use the time to build up health sector capacity—and move to more targeted measures when broad containment can no longer be sustained. It also showed that LIDCs have broadly followed that script. The presentation was appreciated by IMF Executive Directors, and some requested frequent briefs for wider interest. A blog inspired from this presentation has been published here.

5. Board presentation for Africa's Constituency: Departmental Paper - "Macroeconomic Research in Low-Income Countries: Advances Made In Five Key Areas Through A DFID-IMF Collaboration"

Summary: Despite strong economic growth since 2000, many low-income countries (LICs) still face numerous macroeconomic challenges, even prior to the COVID-19 pandemic. Despite the deceleration in real GDP growth during the 2008 global financial crisis, LICs on average saw 4.5 percent of real GDP growth during 2000 to 2014, making progress in economic convergence toward higher-income countries. However, the commodity price collapse in 2014–15 hit many commodity-exporting LICs and highlighted their vulnerabilities due to the limited extent of economic diversification. Furthermore, LICs are currently facing a crisis like no other—COVID-19, which requires careful policymaking to save lives and livelihoods in LICs, informed by policy debate and thoughtful research tailored to the COVID-19 situation. There are also other challenges beyond COVID-19, such as climate change, high levels of public debt burdens, and persistent structural issues.

6. Board presentation: "Briefing on the Outlook for Latin America and the Caribbean"

Summary: The periodical briefing on the economic outlook for Latin America and the Caribbean to the IMF Executive Board, held on March 30 by the IMF Western Hemisphere Department in the context of the 2021 Spring Meetings, included the uptake of the analysis conducted under the FCDO-IMF research partnership regarding the estimated impacts of the COVID-19 crisis on income inequality, highlighting a large adverse impact to the region despite the already high levels of inequality.

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

Nineth Year Annual Report to FCDO
(for period April 2020—March 2021)

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

June 30, 2021

1. PROGRAM DESCRIPTION

"Macroeconomic Research in Low-Income Countries" represents a strategic research partnership between FCDO and the IMF, with the intention of (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 pulling power to expand the network of macroeconomic researchers working on LICs; and (d) achieving this as cost-effectively as possible. The project began in March 2012, with the current phase (Phase 4) to conclude in March 2024.

Our research agenda encompasses key components of the macroeconomic challenges facing LICs in the current global environment. We attempt to exploit the comparative advantage of the IMF, focusing on core macroeconomic challenges and deploying modern analytic tools, that have proven useful in emerging markets and developed countries, such as the application of inflation targeting. 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 project has focused on five core areas, including new topics that will be developed within 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, 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 2024

Countries Covered:

The project covers the countries listed in Table 1.

Table 1
Developing Countries and Their GNI per capita[1]

Country	2011 GNI per capita (US $)	Country	2011 GNI per capita (US $)
Afghanistan	410 2/	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 2/
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 2/	São Tomé and Principe	1360
Dominica	7090	Senegal	1070
Eritrea	430	Sierra Leone	340
Ethiopia	400	Solomon Islands	1110
Gambia, The	610	Somalia	NA 2/
Georgia	2860 3/	South Sudan	984 2/
Ghana	1410	St. Lucia	6680
Grenada	7220	St.Vincent and the Grenadines	6100
Guinea	440	Sudan	1300
Guinea-Bissau	600	Tajikistan	870
Guyana	2900 2/	Tanzania	540
Haiti	700	Timor-Leste	2730 2/
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 4/		

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/ Atlas method.
2/ Data for 2011 are not available. 2010 data given for Afghanistan, Guyana, Sudan, and 2009 data for Djibouti and South Sudan.
3/ Georgia graduation will occur at the expiration of the current arrangement in Apr. 2014.
4/ Zimbabwe is not PRGT-eligible due to its removal from the PRGT-eligibility list by a Board decision in connection with its overdue obligations to the PRGT. It is expected to become PRGT-eligible if the remedial measure were lifted.

[1] The countries included in this table are those that, at the start of this project in 2013, were eligible for IMF lending under the Poverty Reduction and Growth Trust (PRGT), as well as countries that had recently graduated (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:

This first year of the fourth phase of the partnership has been very prolific. Despite the COVID-19 crisis and the long-lasting change of the work environment as staff have been working from home all year long, most of our outcomes along the five main topics under the project display high level performance. We have reached maximum targets or more on twelve of the fifteen outputs considered under the project. Of the remaining three targets, one scored the medium target and two scored above the low target. Outputs from this project have continued reaching high level audience, with multiple IMF Executive Board discussions, high level conferences attended by IMF senior staff and key policymakers from LICs, top international virtual outreaches, etc. A large number of research findings have been featured and widely published through various channels, including high level peer review academic journals.

Given that the COVID-19 pandemic has had a profound impact on LICs and raised concerns about severe setbacks their development efforts, it also altered our work priorities. During this past year, we have strengthened our support for policymaking in these economies to help address the health and economic fallout of the pandemic. Building on the activities and outcomes of the project, and working very closely with country teams, we have responded the urgent needs for policy advice in LICs on various key issues including debt and growth dynamics and inclusion.

Congratulating and encouraging the project, the Deputy Management Director **Antoinette Monsio Sayeh** states—"The COVID-19 pandemic has posed extraordinary challenges to all the countries, and it is more so for low-income countries. The IMF has swiftly responded to the crisis to help its members protect lives and livelihoods, not only by providing financial assistance but also by supporting policy design and implementation. In this ongoing effort, the FCDO-IMF partnership has been very instrumental, by narrowing the important gap in research needed in formulating sound macroeconomic policies in low-income countries. For example, recent country applications of a newly developed model, DIGNAR-19, to analyze debt-investment-growth nexus tailored to the COVID-19 situation, have helped assess much needed fiscal space under the highly uncertain environment. The quality and longevity of the contribution that the FCDO-IMF partnership has provided over years is truly remarkable."

In the same vein, **Ceyla Pazarbasioglu,** the Director of the IMF Strategy, Policy, and Review (SPR) Department has praised the partnership by noting: "The COVID-19 pandemic and its economic repercussions have triggered large increases in poverty and inequality, affecting disproportionately disadvantaged groups such as women and/or workers in informal sectors. Limited resources have often constrained policy support for such groups. IMF-FCDO work has played a key role in informing Fund policies as the institution has stepped in to assist its membership. For example, enhancements to gender and inequality toolkits that incorporate the COVID-19 pandemic have been instrumental in fine-tuning Fund's engagement with member countries. Other instruments analyze the impact of climate change on economies vulnerable to naturals disasters. We look forward to maintaining the momentum of this partnership."

Initially expected last fiscal year, the synthesis document summarizing the main achievements from the first eight years of IMF-DFID collaboration was published this fiscal year and widely disseminated through IMF web pages and social media. This product underscores the key role of well-informed policy debate and thoughtful research in LICs. The document also raised other challenges such as climate change, high levels of public debt burdens, and persistent structural issues that need to be addressed. Given the prominence of the findings, the paper was circulated to the relevant IMF Executive Directors. Authors were invited by an IMF Executive Director to give a presentation. The paper received praise for the relevance of the results and the IMF Executive Director asked for more frequent briefings on the findings of key future research projects.

The research products this year continued to be impactful. More than twenty informative working papers were published across the five topics. Papers were also published in peer-review academic journals, including *Economic Journal* and *Journal of International Economics*. Following the last two year's practice and recommendation, we continue to collaborate with IMF Library to gauge the research impact of our projects by conducting publication bibliometric analysis. Citations are compiled from Lens.org. The metrics reveal that out of 193 intellectual entities, there is a total of more than 1,742 citations (up from 1,403 citations reported last year). The analysis shows that 77 percent of our publications have been cited, with an average citation of 11 per article cited. As a benchmark of comparison, the most widely cited journal in economics, *The Quarterly Journal of Economics*, has a 5-year impact factor of 14. Eighty-three percent of the citations are non-self with no IMF or FCDO affiliation. Several articles were also widely circulated in social media and other platforms. Within three months of its July 2020 publication, the article titled "*Do Monetary Policy Frameworks Matter in Low Income Countries"* garnered attention from 40 Twitter accounts with an upper bound of 184,443 followers, including one by a Brookings and Harvard Growth Lab Argentinian economist with 48,500 followers. Also, the total number of downloads of IMF working papers produced by this programme has exceeded 128,000 (up from about 110,000)—roughly over 850 downloads per paper.[1]

The subsequent lines briefly present the main outcomes across the five topics considered under the IMF-FCDO Macroeconomic Research in LICs project this year.

(i) Modelling and understanding policy choices. Several high-level conferences were organized with various key international institutions from all around the world and, attended by IMF staff, ministers, central bankers, various other key authorities from LICs, and academia. In December 2020, the IMF organized a virtual conference to discuss policy priorities to save lives and livelihoods from COVID-19. The conference aimed at underscoring the options to mitigate the shock until a wide availability of vaccines. Relatedly, another conference was jointly organized with the Peterson Institute for International Economics (PIIE) and the Council on Economic Policies (CEP) with the aim of generating new ideas about policy actions to mitigate the widening inequality induced by the COVID-19 pandemic and related consequences. The key conclusion that emerged from this well-attended conference was that support measures from central banks (in addition to fiscal responses and structural reforms) are needed to help the most vulnerable segments of the population across countries. Moreover, a paper highlighting financing options—including concessional financing from the international financial institutions, grants and loans from bilateral donors, private financing and debt operations— was discussed at the IMF Executive Board. The paper also points to domestic reforms within LICs themselves, as their debt positions are worsening amid the COVID-19 crisis with related output losses. According to the paper, these options are key to foster growth, enhance private investment, raise public revenues, and increase efficiency of spending as recovery takes hold.

Various other IMF board presentations have shed light on the impact of COVID-19 in LICs, providing clearer views on the various containment and mitigation policies to consider when assisting membership and making interventions more inclusive. Their outcomes have been widely appreciated by the IMF Executive Board and helped on Fund policy actions.

[1] The citation analyses were conducted by the IMF Library team (Linda Venable), based on Dimension.ai. The number of downloads of IMF working papers was collected by the IMF's Communication Department.

In addition, toolkits related to investment and growth have experienced another successful year. The DIG framework has continued displaying tremendous development. An amended version of the original DIG toolkit was developed to consider the COVID-19 (DIGNAR-19). It was applied to Nigeria's Article IV through a Selected Issues Policy paper, showing that the COVID-19 resurgence would take a heavy toll on the Nigerian economy, with GDP contracting by 1.7 percent in 2021 and the public-debt-to-GDP ratio continuing to increase in the medium term. DIGNAR-19 has also helped country desks to assess the effects COVID-19 pandemic and related policy responses in low-income-developing countries (LIDCs). Both DIG and DIGNAR-19 have been instrumental on surveillance and operational works. An online course on DIG and DIGNAR-19 was also developed and delivered, with wide access to country authorities and IMF team. The course presents and discusses the key pieces of the models underpinning the toolkits—the investment-growth nexus, the fiscal adjustment, and the private sector response—and their interactions. Lastly, it has emerged from various studies on investment related matters that return on public investment is generally lower than expected, especially during periods of scaling up. Some outcomes show that 60 percent of investment projects are delayed by at least one year and that country characteristics (institutions) play a role. On the absorption capacity of public investment, research findings suggest robust evidence of a U-shaped relationship between public investment and project costs, with investment scaling up having stronger effects on costs during investment booms.

Several other papers in this area are published in peer-reviewed journals. These include analyses shedding light on the pass through of international energy price to local markets and the nexus between exports growth and fuel prices, suggesting that policies should be shaped to smooth fuel price dynamics in countries where the export sector is vulnerable to fuel price shocks. Another published study draws specific implications from the frequent market failures in LICs for the design of labor market institutions in a sample of 30 emerging and developing countries. A separate paper shows that a major channel through which commodity price movements can affect the real economy is through their effect on banks' balance sheets and financial stability. The paper finds that the volatility of commodity prices is a significant predictor of banking crises in a sample of 60 low-income countries. Finally, another paper looks at the argument that the political cost of economic and social reforms declines as crises unravel structural problems that need to be urgently rectified and the public is more willing to bear the pains associated with such reforms. This paper casts doubt on this prevalent view by showing that not only the crises-reforms nexus is unfounded in the data, but rather crises are associated with a reversal of liberalization interventions depending on the institutional environment.

(ii) Understanding macro-financial linkages. IMF-FCDO team delivered three virtual Forecasting and Policy Analyses System (FPAS) technical assistance missions to Ghana to assist the Bank of Ghana in continued development of FPAS and forecasting capacity. On this topic, a forthcoming paper in the *Journal of International Economics* shows that commodity price volatility is likely to trigger financial instability through a reduction in government revenues and a shortening of sovereign debt maturity, which are likely to weaken banks' balance sheets.

(iii) Building resilience. Work in this area has kept the good momentum with many outputs featured in key policy papers at the Fund. A chapter in the October 2020 Sub Saharan African Economic Outlook found that on average, climate change could reduce GDP growth by at least 1 percentage point in the month a climate shock occurs, which call attention for policies to prioritize well-targeted mitigating policies as they would be more cost-effective than frequent disaster relief.

Significant developments on remittances were also recorded. An IMF blog by the project's experts has been featured in various media and underscores the need to support migrants as remittances received from migrants are proved to be vital to households in recipient countries. It highlights the need for host countries to consider migrant status in key sectors such as the labor market.

Fragile states continue to benefit from the project. Various external conferences were organized in for fragile states to highlight the key role of remittances in context of fragility. One of them includes the high-level policy conference organized by the London School of Economics with the prominent participation of Tim Besley (LSE) as a speaker.

Four courses by IMF-FCDO experts were also delivered to country officials at the Africa Training Institute, the Euro-Mediterranean Economists Association, the Joint Vienna Institute, the Singapore Training Institute. These courses aimed at assessing the remittances and COVID-19 nexus, the stabilization role of remittances, and the macroeconomic policy of remittances. The course taught at the Africa Training Institute was based on the IMF-FCDO book on *Macroeconomic Policy in Fragile States* published last year. IMF- FCDO multidisciplinary experts offered a series of internal courses on Macroeconomics in Fragile states to IMF Staff. These courses were designed to strengthen desk economists' skills in key areas of macroeconomics of fragile states—ranging from policy-induced fragilities, governance and operational environment, fiscal and financial policies, to their implementation.

(iv) Promoting structural change and institutional development. This area has seen the development of a unique Structural Reform Database and related web-based toolkit. Based on that database, an interesting paper that assess the impact of financial crises on structural reforms have been accepted for publication in *Economic Journal*. This workstream has also been helping desk economists to compute potential growth gains from structural reforms to close the gap relative a benchmark level. Various studies were also published in this area and cover issues ranging from the impact of financial crises on structural reforms, the effects of tariffs on economic growth, to comparison between cities in developed and developing countries.

(v) Enhancing inclusion. Noticeable progress has been made on inclusion. Outcomes featured in the October 2020 and April 2021 WEO emphasized widening inequality between countries due to the crisis, as well as the education losses due to the lockdown and the need of infrastructures in resources limited regions. Papers on inclusive citizenship law, gender equality and macroeconomic outcomes and the long-term aggregate and distributional consequences of COVID-19 were published in *Review of Law & Economics, Oxford Review of Economic Policy, and the Journal of Mathematical Economics*. Their results support the contention that promoting inclusion remains a key factor for better social and macroeconomic outcomes.

On top of these outcomes, various internal policy works were produced and have been informative to operational work. COVID-19 has been a crisis like no other with a lot of uncertainty about how the virus would evolve and the implication for the economy. In this context, the team has put together a series of internal notes on COVID-19 to help country teams navigate specific issues. For example, the team put together a model (DIGNAR-19) for macro policy assessment of COVID-19 in low-income countries. The model incorporates the main shocks and channels related to the ongoing pandemic, such as those associated with lockdown policies and health containment measures. DIGNAR-19 has been used by country teams (for instance, see the application of DIGNAR to Nigeria in output 2.1). Other notes included the following: (i) epidemiological multigroup SIR model to analyze alternative scenarios of containment policies and exit strategies for COVID-19, (ii) a look at COVID-19 and government debt dynamics, (iii) central bank communication, (iv) food (in)security in Sub-Saharan Africa, (v) a look at severe epidemics in modern history, (vi) a look at past health-related shocks identified by surges in Google online search volume, and (vii) poverty nowcast. These notes have informed key policy discussions in IMF operations, including IMF program country cases, in the context of a new and unfamiliar crisis. As recommended last year, internal works on COVID-19 have been informative and useful as most of their findings were featured in key external publications such as the *World Economic Outlook*, Article IV Consultation Staff Reports, and *Selected Issues Papers*.

Another recommendation from last year includes a suggestion to consider forming an advisory committee to advise and discuss policy relevance of outputs of the programme. We have started the work on this recommendation. We have put together a proposal to form an advisory committee. The proposal includes a panel containing senior academics and policymakers, as well as the terms of the reference of the advisory committee. The proposal has been circulated with FCDO. However, we have not been able to make further progress on the advisory committee as the ongoing crisis has forced staff to shift focus on crisis work.

Challenges:

Due to the COVID-19 crisis, the review and publication process of many of our outcomes were frozen. In light of increasing requests related to COVID-19 issues from membership—as countries have been adjusting to containment and mitigating measures and trying to secure vaccines—it has been difficult for staff to review all outputs submitted.

In parallel, with travels remaining suspended all year long, limited interactions between staff and country authorities made it hard for some key outputs such as Article IVs to be completed. As vaccines are being distributed, there is hope that those outcomes would be completed as soon as missions resume. COVID-19 has given rise to multiple crises in LICs while widening inequality between them and advanced economies, highlighting their multidimensional macro-financial vulnerabilities. All these challenges come together to underscore the relevance of the IMF-FCDO macroeconomic research partnership as we are continue running Phase IV of this partnership. The project is critically important as it is supporting policy relevant works that are contributing to assist LICs.

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 nine years of this project. We have met, and in some cases exceeded, the “high” target for all outputs for year 9 of the programme except for three outputs, where two are above the low target and one meets 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.

Table 2
Summary of the research outputs

Type of Output	Year 1 Outputs	Year 2 Outputs	Year 3 Outputs	Year 4 Outputs	Year 5 Outputs	Year 6 Outputs	Year 7 Outputs	Year 8 Outputs	Year 9 Outputs	Total	Output Targets for End of Year 9	
Working Papers (1.1)	13	17	10	16	19	19	19	16	21	150	H	150
											M	145
											L	140
Published Papers (1.2)	1	6	9	8	13	11	10	12	13	83	H	83
											M	79
											L	75
Books (1.3)	0	0	0	0	2	0	0	0	0	2	T	2
Number of meetings of programme advisory group (1.4)	.	.	.	.	.	.	.	.	0	0	T	1
Uptake by IMF Teams (2.1)	9	12	13	14	16	21	13	17	19	134	H	129
											M	125
											L	121
Courses offered to IMF staff (2.1.a)	.	.	.	.	.	.	.	.	8	8	H	4
											M	3
											L	2
Uptake by Authorities (2.2)	1	2	4	2	7	13	9	8	8	54	H	52
											M	49
											L	46
Courses offered to country authorities (2.2.a)	.	.	.	.	.	9	7	4	5	25	H	24
											M	22
											L	20
High-Level Policy Conferences attended by senior IMF staff (3.1)	6	4	2	1	9	8	6	4	2	42	H	45
											M	43
											L	41
Results of the research papers produced reflected in IMF board discussions. (3.2.a)	3	3	2	1	2	5	2	2	2	22	H	25
											M	23
											L	21
Results of the research papers produced reflected in IMF policy papers such as SDN, policy memos to management (3.2)	4	4	3	2	6	10	7	5	8	49	H	48
											M	45
											L	42
Commissioned Papers (4.1)	0	13	0	0	7	5	1	4	3	33	H	33
											M	31
											L	30
Toolkits (4.2)	0	0	1	1	3	2	2	0	2	11	H	12
											M	11
											L	10
External researchers at high-level policy conferences (4.3)	6	5	5	15	20	35	22	16	15	139	H	138
											M	134
											L	130
Outputs disseminated in e-newsletter and public web page (4.4)	2	4	4	4	4	4	4	4	4	34	H	34
											M	32
											L	31
Thematic areas of IMF policy influenced and made LIC-specific (1)	3	2	0	0	3	2	1	1	4	16	H	16
											M	14
											L	12

Log-frame Outputs

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

Output 1.1 – Working papers

This year, we completed 21 working papers, bringing the total to 150 over nine years.

Topic 1. Modelling and understanding policy choices

1. Do Monetary Policy Frameworks Matter in Low Income Countries?
2. Quarterly Projection Model for the National Bank of Rwanda
3. Public Investment over the Fiscal Cycle
4. To Pass (or Not to Pass) Through International Fuel Price Changes to Domestic Fuel Prices in Developing Countries: What Are the Drivers?
5. Imported Food Price Shocks and Socio-Political Instability: Do Fiscal Policy and Remittances Matter?
6. Food Price Shocks and Household Consumption in Developing Countries: The Role of Fiscal Policy
7. Building Back Better: How Big Are Green Spending Multipliers?
8. Delays in Public Investment Projects
9. Monetary Policy Frameworks: An Index and New Evidence (forthcoming)
10. IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems (FPAS): Taking Stock (forthcoming)
11. An Open Economy Quarterly Projection Model for Malawi (forthcoming)

Topic 2. Understanding macro-financial linkages

We have no publication under this output this year.

Topic 3. Building resilience

12. Building Resilience to Natural Disaster in Vulnerable States: Savings from Ex Ante Interventions
13. Enhancing Resilience to Climate Change in the Maldives

Topic 4. Promoting structural change and institutional development

14. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions
15. Will the AI Revolution Cause a Great Divergence?
16. Is Regional Trade Integration a Growth and Convergence Engine in Africa?
17. Socio-Economic Spillovers from Special Economic Zones: Evidence from Cambodia
18. Search Externalities in Firm-to-Firm Trade

Topic 5. Enhancing inclusion

19. Re-Opening After the Lockdown: Long-run Aggregate and Distributional Consequences of COVID-19
20. Macroeconomic Research in Low-income Countries: Advances Made in Five Key Areas Through a DFID-IMF Collaboration
21. Finance, Growth, and Inequality (forthcoming)

Output 1.2 - Published Papers

We published 13 papers in peer-reviewed journals this year.

Topic 1. Modelling and understanding policy choices

1. To pass (or not to pass) through international fuel price changes to domestic fuel prices in developing countries: What are the drivers?
   Energy Policy
2. Export Growth - Fuel Price Nexus in Developing Countries: Real or False Concern?
   The Energy Journal, forthcoming
3. Designing Labor Market Institutions in Emerging Market and Developing Economies: A Review of Evidence and IMF Policy Advice
   Comparative Economic Studies
4. Delays in Public Investment Projects
   International Economics, forthcoming
5. On the capacity to absorb public investment: How much is too much?
   World Development

Topic 2. Understanding macro-financial linkages

6. Commodity Prices and Banking Crises
   Journal of International Economics, forthcoming

Topic 3. Building resilience

7. Tropical cyclones and post-disaster reconstruction of public infrastructure in developing countries
   Economic Modelling

Topic 4. Promoting structural change and institutional development

8. Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms
   Economic Journal, forthcoming
9. Are tariffs bad for growth? Yes, say five decades of data from 150 countries
   Journal of Policy Modeling
10. Comparing cities in developed and developing countries: Population, land area, building height and crowding
   Regional Science and Urban Economics

Topic 5. Enhancing inclusion

11. Does an Inclusive Citizenship Law Promote Economic Development?
    Review of Law & Economics
12. Gender equality and macroeconomic outcomes: evidence and policy implications
    Oxford Review of Economic Policy
13. Re-opening after the lockdown: Long-run aggregate and distributional consequences of COVID-19
    Journal of Mathematical Economics

Output 1.3 – Freely available books

We have no publication under this output this year.

Output 1.4 – Advisory group meeting

We have no items to report under this output this year.

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

Output 2.1 - Country Applications with IMF Country Teams

Our team completed 3 applications with IMF country teams and provided guidance to IMF country teams on several topics through 8 internal notes.

FPAS framework

We have no publication under this topic this year.

Diversification

We have no publication under this topic this year.

DIG/Investment scaling up/Debt sustainability

1. Application of DIGNAR-19 model to Nigeria (Article IV)
2. Application of DIGNAR-19 model to Nigeria (Selected Issues)
3. Using Macroeconomic Frameworks to Analyze the Impact of COVID-19
4. Internal note: A Multigroup SIR Model to Analyze COVID-19 Scenarios
5. Internal note: DIGNAR-19: A Model for Macro Policy Assessments of the COVID-19 Pandemics in LIDCs
6. Internal note: COVID-19 and Government Debt Dynamics in Low-Income Developing Countries

Natural disasters

We have no publication under this topic this year.

Income and Gender Inequality

We have no publication under this topic this year.

IASOC Toolkit – An Assessment Toolkit for Monetary Policy Frameworks

We have no publication under this topic this year.

Other

7. Internal and External note: Central Bank Communication Through COVID-19
8. Internal note: Food (in)security in SSA under COVID-19: a macro perspective
9. Internal note: Severe Epidemics in Modern History: Growth, Debt and Civil Unrest
10. Internal note: What we can learn from past health-related shocks identified by surges in Google online search volume
11. Internal note: produce poverty nowcast for 2020 for the WEO team

Output 2.1.a – Courses offered to IMF staff

Our team delivered 8 courses to IMF staff.

1. Module 1. Overview and General Macroeconomic Policy in Fragile and Conflict-Affected States
2. Module 2. Governance. Operating in a Fragile Environment
3. Module 3. Fiscal. Building Fiscal Institutions in a Fragile Environment
4. Module 4. Monetary, External, and Financial Sector
5. Module 5. Fund Policy in Fragile and Conflict-Affected States
6. Module 6. Operationalizing Fund Policy in Fragile and Conflict-Affected States
7. Macroeconomic Consequences of Remittances in LMICs and FCS
8. Public Debt, Investment, and Growth. The DIG and DIGNAR Models (DIGx)

Output 2.2 - Uptake by Country Authorities

This year, we coordinated with country authorities on one project.

1. Three - Virtual FPAS TA mission to Ghana

Output 2.2.a – Courses and Workshops Offered to Country Authorities

We held five courses to increase uptake of our research by country authorities and IMF staff.

1. Public Debt, Investment, and Growth. The DIG and DIGNAR Models (DIGx)
2. Are the Remittance Flows Another Casualty of COVID-19? at Joint Vienna Institute
3. Are the Remittance Flows Another Casualty of COVID-19? at Singapore Training Institute
4. Macroeconomic Policy in Fragile States at Africa Training Institute
5. Fragile States post COVID-19: What Stabilization Policies? At Euro-Mediterranean Economists Association

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

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

This year we held two high-level conferences.

1. COVID-19 Pandemic in Developing Countries
2. Monetary Policy and Inequality: COVID-19 and Beyond

Output 3.2 – Results of papers reflected in IMF Board discussions and papers

During the nineth year, the results of our research have been reflected in two IMF Board papers/meetings, as well as other IMF policy papers including a chapter in the Regional Economic Outlook for Africa.

IMF Board Papers/Meetings

1. Update on the Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities
2. Macroeconomic Developments and Prospects in Low-Income Countries—2021

Output 3.2.a – Results of papers reflected in IMF policy papers

1. WEO: WEO Box: Inclusiveness in Emerging Market and Developing Economies and the Impact of COVID-19
2. WEO: WEO Box: Box 2.2. Education Losses during the Pandemic and the Role of Infrastructure
3. REO Chapter: REO Chapter: Adapting to Climate Change in Sub-Saharan Africa
4. Board presentation: The COVID-19 Crisis and Low-Income Developing Countries: Impact, Policy Response and Policy Tradeoffs
5. Board presentation for Africa’s Constituency: Departmental Paper - "Macroeconomic Research in Low-Income Countries: Advances Made In Five Key Areas Through A DFID-IMF Collaboration"
6. Board presentation: "Briefing on the Outlook for Latin America and the Caribbean"

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

Output 4.1 – Commissioned Papers

This year we have three commissioned papers.

1. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions
2. Finance, Growth, and Inequality, *forthcoming*
3. Is Regional Trade Integration a Growth and Convergence Engine in Africa?

Output 4.1.1 – Toolkits

This year we have two toolkits.

1. Structural Reform Database and its web toolkit (internal release)
2. DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemics in EMDEs

Output 4.2 – Attendance of External Researchers at High-Level Policy Conferences

The team offered 15 presentations at high-level policy conferences (see Appendix 3 for further details).

Output 4.3 – Results disseminated in e-newsletters

Each quarter, we send out an e-newsletter that spotlights working papers, conferences, and other activities we have completed over the last three months.

In addition to the newsletters, the research under the FCDO-IMF partnership has also been featured in other outlets such blogs and video.

Blogs

1. IMF Blog: "COVID-19: Without Help, Low-Income Developing Countries Risk a Lost Decade".
2. IMF Blog: "How COVID-19 Will Increase Inequality in Emerging Markets and Developing Economies".

In the press and other outlets

1. Quartz: "The pandemic has inequality rising in poor countries".
2. CNN: "As Covid-19 rages on, countries need to support migrant workers".
3. World Economic Forum: "How COVID-19 will increase inequality in emerging markets and developing economies".

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 project have continued retaining attention and praises, with large number of findings being discussed at the IMF Executive Board, featured in country Article IV reports, the *World Economic Outlook, Regional Economic Outlook*, LIDC Report, and various Policy Papers. Country applications have facilitated policy dialogue and well-designed courses have helped strengthen country authorities' capacity. Many of our research papers were published in highly quoted academic journals. All these constitute evidences, highlighting the impact of the project.

About the FCDO-IMF partnership, **Gita Gopinath,** the IMF Chief Economist and Director of Research Department said—"2020 was a year like no other. Policymakers around the world faced unprecedented challenges on the health front as well as on the economic front. For us, this required shifting our resources on research work to operational and policy work. But with the support from our partnership with the FCDO, our team working on low-income countries 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."

The project also received praises from **Edward F. Buffie**, Professor of Economics, Indiana University (USA): "Since 2012, owing to the IMF-FCDO partnership, critical developments on the Debt, Investment, and Growth (DIG) framework at the IMF have been instrumental in incorporating market failures and other imbalances in the labor markets into policy analysis. By shedding light on the tradeoffs between debt sustainability, investment, real wages and inequality, these developments have informed policy making in LICs, as countries are taking measures to foster inclusive growth and improve the living standards of their people into policy analysis sustainability, investment, real wages and inequality."

Virtual TA missions to the Bank of Ghana (BoG) to support BoG's forecasting team with model-based assessment during the Monetary Policy Committee meetings (amidst the COVID-19 crisis) have strengthened BoG staff and equipped them to adjust the application to their own needs. Various courses delivered to country authorities as highlighted above are also helping them in their operational work.

With travels remaining suspended, and the focus centered on assisting members cope with the impacts of the pandemic, contributions to Article IV Reports and Selected Issues Papers (SIPs) were somewhat reduced. IMF-FCDO experts have subsequently adapted to the situation and focused their efforts on helping country teams in various other ways. These include:

- Production of internal notes related to COVID-19. Specific issues covered a wide range of topics from food (in)security under COVID-19, the economic and political consequences of past severe epidemics, production of real-time estimates on the share of people under extreme poverty, to forecasting the macroeconomic consequences of COVID-19 and related policies. These various notes have informed key policy discussions, including those for IMF program cases, policy reports and presentations around the organization.

- Development of curricula and delivery of training on fragile states to strengthen their capacity in policy making in the context of the COVID-19 pandemic. These capacity development activities focused on: (i) the governance and operating system and the building of fiscal institution in fragile environment; (ii) monetary and exchange rate policy; (iii) financial capital flows and financial development in context of fragility; and (iv) Fund policy and its operationalization in countries in fragile situation. These trainings not only provide critical expertise to participants but offer a peer-learning opportunity very benefic to the country authorities.

- Contributions to the October 2020 and April 2021 editions of the *World Economic Outlook* by producing two compelling boxes that provide deep empirical analyses of (i) the possible implications of COVID-19 on poverty and inequality and, (ii) education losses during the pandemic and the role of infrastructure. These outcomes have continuing giving well exposition to the partnership.

An online course on analyzing the relation between public investment, growth, and public debt dynamics using the DIG and DIGNAR models was also launched with high attendance. Of the 233 people who were active on the platform, a total of 179 passed the course. This success rate of 77 percent compares favorably with the average success rate of 67 percent for all IMF Small Private Online Courses and suggests strong overall engagement in the course. Furthermore, of the 177 people who took the pre- and the post-tests, on average people scored 25 percentage points higher on the post-test than the pre-test. This is above the overall training program average and suggests strong learning gains. Given the success of this online course experience, many other trainings are expected to follow. Similarly, courses delivered to authorities in collaboration with IMF training institutes have also positively impacted country officials as they apply the skills learned to their country's policy works. The environment created by the courses also give authorities an opportunity for peer-learning, which could be informative for their work.

Owing to IT infrastructure, IMF-FCDO staff were able to attend high level research and academic conferences hosted by various institutions around the world, which also created an opportunity to learn about new research topics.

As the work under the project continues shedding light on relevant topics such as COVID-19 and related consequences, climate change, inclusion, digitalization, etc., the impact of the partnership is undoubtably invaluable in supporting and informing policy making across LICs.

Overall, by leveraging the expertise of senior academic visiting scholars from all regions around the world, the IMF-FCDO project has been very impactful by offering research-driven compelling policy implications, critical to support LICs as they are moving toward the 2030 sustainable development goals agenda.

7. COSTS, VALUE FOR MONEY, AND MANAGEMENT

The approved budget for the project is US$30.5 million.[2]

Appendix 2 provides the formal financial reporting of the project, with a financial statement and projects generated by the IMF's financial systems. As of April 2021, $22.6 million has been drawn down 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 eight years of the project:

Table 4
Project Expenditures in Years 1-9

Activity	Total, Years 1-9
HQ led missions including entire mission	$6,823,847
Short-term Advisors - CD delivery	$525,562
Research HQ based/Visiting Scholars	$8,098,784
Seminars & Study Tours	$1,673,499
Project Backstopping	$3,173,599
Project Management	$247,263
Exceptional Expenses	$550,638
Language Services	$2,170
Trust Fund Fee	$1,476,675
Total	**$22,572,037**

We do not foresee any changes in cost structures due to exchange rates.

Value for Money:

This project continues to be highly cost effective, owing to solid governance on the procurement process together with the high-quality work by the team. We strictly follow all Fund guidelines for hiring, travel, and conferences. All contractual employees undergo a competitive process before being hired. Outputs are produced under firm time-frames and must meet Fund requirements for publication. The quality of our papers is further evaluated when they are submitted to peer-reviewed publications.

The average cost per paper is lower than the FCDO benchmark of $190,000 (£135,000) per paper.[3] Table 5 shows that the cost per working paper for the nine years is approximately $66,000 (£47,000), down from about $69,000 (£49,000) reported last year. Table 5 also shows that the cost per published paper is about $129,000 (£91,000), down from around $138,000 (£98,000) reported last year. This is in line with the expectation that as more working papers get accepted for publication, the cost per published paper will decrease. 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.[4] The total staff, contractual, and visiting scholar cost is thus split between

[2] This is based on $23.3 million up to DFID3 plus $7.2 million of DFID4 (using the exchange rate as of May 13, 2021).

[3] The currency conversion is based on the exchange rate as of May 13, 2021.

[4] The total research staff costs are estimated as the sum of "HQ led missions", "Short-term Advisors", and "Research HQ based/Visiting Scholars" from Table 4. The category "HQ led missions" includes both IMF staff salary and travel

papers and applications.

The quality of the project outputs is very high, even with the low average cost. The total number of publications reached 82 for the nine years, including the ones at the highly ranked journals such as Economic Journal, Journal of International Economics, Review of Law & Economics, Oxford Review of Economic Policy and Journal of Mathematical Economics, among others. As noted in Section 2, the analysis shows that 77 percent of our publications have been cited, with an average citation of 11 per article cited. As a benchmark of comparison, the most widely cited journal in economics, The Quarterly Journal of Economics, has a 5-year impact factor of 14.[5] Our products are also included in programs of top academic conferences such as the annual meetings of the Allied Social Science Associations (ASSA), NBER Summer Institute and others. 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 5
Cost per Working and Published Paper

Total Staff/Contractual/VS Costs[1]	$15,448,193
Research Paper Costs	$11,586,145
Country Applications Costs	$3,862,048
Working Papers	176
Produced	150
Commissioned	26
Cost Per Working Paper	$65,830
Published Papers	90
Produced	83
Commissioned	7
Cost per Published Paper	$128,735

[1] Estimated as the sum of "HQ led missions", "Short-term Advisors", and "Research HQ based/Visiting Scholars". Note that the category "HQ led missions" 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.

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

expenses. Thus, the estimates we have calculated for working and published paper costs likely overestimate the true cost of research time.

[5] These citation analyses were conducted by the IMF Library team (Linda Venable), based on Dimension.ai.

8. WORK PLAN AND TIMETABLE

Given the unprecedented and ongoing crisis (COVID-19), we will continue the work on COVID-19 and LICs from last year, while advancing work on the main areas of research of the programme. It is also important to note that the interruption on travel/mission is likely to continue in the short term.

Individual work plans:

The following provides a brief overview of our plans for each topic.

(1) COVID-19

Modeling policy choices: Public debt vulnerabilities in LICs

a) There will be an uptake by IMF staff with an application of DIGNAR-19 model to Guinea.
b) The DIGNAR-19 toolkit will be published on IMF.org.
c) A team is planning an online training seminar on the DIGNAR-19 toolkit.
d) 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.

Modeling policy choices: Monetary policy frameworks in LICs

e) Motivated by the recent increases in inequality and poverty in low-income countries, which have been exacerbated because of the COVID shock, a team will study conceptually and empirically the implications on monetary policy design of heterogeneity at the micro level.

Modeling policy choices: Dealing with public investment trade-offs: more physical or human capital?

f) The team will contribute with a box on “Reaching the Pre-COVID Convergence Path Through the Lens of a Dynamic General Equilibrium Macroeconomic Model” in a board paper. 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.

Understanding macro-financial linkages: An investigation into the cost of remittances

g) There will be a paper on “Defying the Odds: Remittances in the Time of COVID-19”. This paper analyses the factors driving the resilience of remittance flows to the COVID-19 pandemic.

Promoting structural change and institutional development: Diversification and rethink of development policy

h) The COVID-19 pandemic has exposed vulnerabilities of global value chains (GVCs) as tight interdependencies of firms have amplified demand and supply shocks across countries. In a paper, a team will examine firms’ strategies to mitigate risks associated with disruptions in GVCs and how these strategies impact trade linkages with developing countries. Using

French firm-level customs data, the team will measure relative contribution of extensive and intensive margins of firms' imports and exports to aggregate changes in trade.

Enhancing inclusion: Income inequality

i) A project will employ GDP data from the WEO database to empirically assess cross-regional and cross-country divergence in the aftermath of the COVID-19 pandemic and to compare the experience from the pandemic with those of past crises. The analysis will also look at whether within different income groups of countries there exists diverging growth paths and examine whether these would likely be transitory or permanent. Policy implications for reestablishing convergence paths will be considered.

(2) Modelling policy choices

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

a) There will be a second course for IMF Staff and country authorities on: The DIG and DIGNAR models.
b) There will be a paper on fiscal consolidations in developing countries.

Monetary policy frameworks in LICs:

c) There will be a working paper with country application on: "Central Bank Creditability, Monetary Frameworks, and Communication Tools in Caucasus and Central Asia (CCA)". The paper aims to fill some gaps in the literature that include: what is the state of central bank's, institutional monetary frameworks, transparency, and communication in the CCA? How effective are transparency and communication strategies to anchor inflation expectations, and to enhance interest rate transmission in the CCA?
d) There will be a high-level policy conference on "Monetary Policy Frameworks: An Index and New Evidence".
e) Staff will put together the IAPOC Toolkit, which is an assessment toolkit for monetary policy frameworks. The IAPOC Toolkit will help IMF staff to better understand the monetary policy frameworks in different countries and to conduct empirical analysis with the IAPOC index.
f) As part of the Ghana FPAS CD project, staff will put together documentation of the Quarterly Projection Model for Ghana, which captures key features of the Ghanaian economy.
g) A team will work closely with the IMF's Bangladesh team to develop a Quarterly Projection Model for Bangladesh, to aid the team's surveillance and program work and facilitate discussions of the forecast with the authorities.
h) A team will continue to build effective macroeconomic frameworks for monetary policy and modernize forecasting and policy analysis capacity at the LIC central banks. As part of this initiative: (i) a team will deliver two TA missions to Ghana under the existent FPAS CD project there, and (ii) launch at least two new FPAS CD projects, including in Bangladesh and Solomon Islands.
i) Staff will develop additional module (on forecasting) for the existent online course on Monetary Policy Analysis and Forecasting (MPAFx)

(3) Understanding macro-financial linkages

An investigation into the cost of remittances:

a) There will also be a paper on "What Drive Remittances Cost? An empirical assessment". This paper tests empirically a wide range of determinant factors of remittance cost and offers insights on how this can be reduced.

Financial dollarization and economic development

b) Staff will contribute a book chapter in a book on China-Africa linkages. The chapter will illustrate how shocks in China affect Africa in a general equilibrium setting where the initial impact through trade linkages could be further amplified via other transmission channels, including relative price changes, demand and financial channels. Second, it will update and extend the previous empirical findings on the impact of China on commodity prices. Lastly, it will provide empirical estimates of financial spillovers from China to foreign exchange and equity markets in Africa.

(4) Building resilience

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

a) There will be a conference on “Climate-Related Natural Disasters: Macroeconomic Effects and Policy Responses”.
b) Staff will put together a paper on “Monetary policy in disaster-prone countries”.
c) There will be an application of the DIGNAR model to Uganda.
d) A team will work on a paper on investing in resilience building. This research project is to provide experimental results on how cross sector inequality and economic performance would be affected by resilience building under different fiscal consolidation scenarios in Dominica.
e) There will also be a paper on building ex-ante resilience against natural disaster. This research project is to provide simulation results based on a toolkit on how much gain or loss in consumption and production could ex-ante resilience building bring to disaster vulnerable countries under different financing schemes.

(5) Promoting structural change and institutional development

Diversification and rethink of development policy:

a) There will be a new tariff dataset. Staff will use the physical collection of the Bureau of International Customs tariff schedule to extend existing tariff databases up to 1960s for a broad range of countries.
b) Staff will work on a paper on network bottlenecks and market power. The paper considers how a firm’s position in a production network can confer market power. The authors develop a tractable theory of market power in production networks which introduces the notion of a bottleneck: a firm whose removal from the network leads to a sufficiently large fall in output such that supply can no longer meet demand. The location of these bottlenecks can depend not only on a firm’s immediate connections, but also on the entire structure of the network.
c) Staff will work on a paper on trade under uncertainty. The paper will use a model on the interaction of sunk costs and firms’ investment decisions to examine trade dynamics following the COVID-19 shock. Using US and Colombian monthly trade data, the paper will rank industries by their level of sunk costs. It will examine how quickly trade recovered in industries with various levels of sunk costs.
d) Staff will work on a paper using geospatial and satellite data to map inequality. The plan is to use satellite data on night-time luminosity to map sub-national dynamics of economic

inequality across the world. Given that subnational GDP data and other indicators of economic activity at the sub-national level are largely absent in the case of developing countries, nightlights data serves as a proxy for economy activity at the sub-national level. This data will allow to estimate cross-regional convergence rates within countries and across countries.

e) A paper will investigate an interaction between structural transformation and lifecycle inter-sectoral mobility. The paper will explore how population aging coupled with differential mobility rates over the life cycle affect the speed of structural change since the 1970s. The paper will conduct this analysis to a wide range of developing countries with relatively young populations, using IPUMS-International data.

Automation and changing landscape of structural transformation in LICs

f) A paper will investigate digitalization and perception of women leadership in Africa. The research uses microeconomic data collected from 33 African countries to assess the drivers of individuals' perceptions of women leadership capabilities.

g) There will be a paper on “Mobile Internet And Bank Credit: Evidence From Rwanda”. This paper assesses how ICT technology (mobile and broad band internet) can boost access to credit.

(6) Enhancing inclusion

Gender equality and sustainable growth:

a) Staff will work on paper on COVID-19 and girls’ school drop-off in developing countries. Based on macroeconomic data, the research will show that pandemic effects on school drop-off is larger for girls than for boys with important economic costs.

Income inequality: on the welfare effects of revenue mobilization in LICs:

b) A paper will provide new evidence on the impact of fuel prices on inflation and the distributional implications, building on the updated Global Monthly Fuel Price Dataset.

c) A Selected Issues Paper will explore the implication of gender education inequality in Kenya.

9. RISK

The overall risk for this project remains low.

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

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

PROJECT NAME	Macroeconomic Research in Low-Income Countries (LICs)							
IMPACT	**Impact Indicator 1**		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**		
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). https://databank.worldbank.org/source/poverty-and-equity					
	Impact Indicator 2		**Baseline**	**Milestone 1**	**Milestone 2**	**Milestone 3**		
	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**	**Target (March 2023)**		**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)	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				
			IMF Reporting - board papers, policy papers, conference reports/papers, pilot applications of country teams, refs in staff docs, or internal policy memos.					
INPUTS (£)	**DFID (£)**		**Govt (£)**	**Other (£)**	**Total (£)**		**DFID SHARE (%)**	
	£5.1 million						100	

OUTPUT 1	Output Indicator 1.1		Baseline	Milestone 1	Milestone 2	Target (March 2023)		Assumption
High quality, policy relevant research on macroeconomic issues affecting LICs produced.	Number of **priority research papers** 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.	**Planned**	March 2020 (129)	By March 2021: H (150 papers) M (145 papers) L (140 papers)	By March 2022: H (166 papers) M (161 papers) L (156 papers)	By March 2023: H (181 papers) M (176 papers) L (171 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 financial or economic crisis, such that IMF staff can devote time to the project as committed. 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.
		Achieved		150				
		Source						
		IMF publications						
	Output Indicator 1.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
	Number of **research papers accepted for publication** in appropriate high-quality peer-reviewed journals	**Planned**	March 2020 (70)	By March 2021: H (83 paper) M (79 papers) L (75 papers)	By March 2022: H (92 papers) M (88 papers) L (84 papers)	By March 2023: H (101 papers) M (97 papers) L (93 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		83				
		Source						
		IMF to provide details of academic publications and acceptances						
	Output Indicator 1.3		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
	Number of **published books** (where either (i) the book or (ii) all the substantial content is freely available)	**Planned**	March 2020 (2)	By March 2021: 2 books	By March 2022: 3 books	By March 2023: 4 books	Specific context: no books in first year due to critical work on covid-19, thereafter one book per year.	
		Achieved		2				
		Source						
		IMF publications						
	Output Indicator 1.4		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
	Number of meetings of programme advisory group (cumulative)	**Planned**	March 2020 (new indicator)	By March 2021: 1 meeting	By March 2022: 2 meetings	By March 2023: 3 meetings	Specific context: one meeting per year.	
IMPACT WEIGHTING (%)		**Achieved**		0				
30		**Source**						
		IMF reporting						

Output Indicator 2.1		Baseline	Milestone 1	Milestone 2	Target (March 2023)		Assumptions
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, evidence of number of country teams applying policy tools and frameworks: H (129) M (125) L (121) Courses offered to IMF staff H (4) M (3) L (2)	By March 2022, evidence of number of country teams applying policy tools and frameworks: H (144) M (140) L (136) Courses offered to IMF staff H (8) M (7) L (6)	By March 2023, evidence of number of country teams applying policy tools and frameworks: H (159) M (155) L (151) Courses offered to IMF staff H (12) M (11) L (10)	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		134 and 8				
	Source						
	IMF reporting						
Output Indicator 2.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
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, evidence of number of country authorities applying policy tools and frameworks: H (52) M (49) L (46) Courses offered to country authorities H (24) M (22) L (20)	By March 2022, evidence of number of country authorities applying policy tools and frameworks: H (57) M (54) L (51) Courses offered to country authorities H (28) M (26) L (24)	By March 2023, evidence of number of country authorities applying policy tools and frameworks: H (62) M (59) L (56) Courses offered to country authorities H (32) M (30) L (28)	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 and 25				
	Source						
	IMF reporting						

OUTPUT 3	Output Indicator 3.1		Baseline	Milestone 1	Milestone 2	Target (March 2023)		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, number of policy conferences drawing on outputs from the project: H (45) M (43) L (41)	By March 2022, number of policy conferences drawing on outputs from the project: H (49) M (47) L (45)	By March 2023, number of policy conferences drawing on outputs from the project: H (53) M (51) L (49)	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				
		Source						
		IMF reporting						
	Output Indicator 3.2		Baseline	Milestone 1	Milestone 2	Target (March 2023)		
	Results of the research papers produced reflected in IMF policy papers such as Staff Discussion Notes, policy memos to management Sub-indicator 3.2.a Results of the research papers produced reflected in IMF board discussions.	**Planned**	March 2020 policy papers (41) Board discussions (20)	By March 2021, policy papers: H (48) M (45) L (42) Board discussions H (25) M (23) L (21)	By March 2022, policy papers: H (53) M (50) L (47) Board discussions H (28) M (26) L (24)	By March 2023, policy papers: H (58) M (55) L (52) Board discussions H (31) M (29) L (27)	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 and 22				
IMPACT WEIGHTING (%)		**Source**						
30		IMF reporting						

Output Indicator 4.1		Baseline	Milestone 1	Milestone 2	Target (March 2023)		Assumptions
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 (31)	By March 2023 H (37) M (35) L (33)	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		33				
	Source						
	IMF reporting						
Output Indicator 4.2		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
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 country authorities).	**Planned**	March 2020 (9)	By March 2021: H (12) M (11) L (10)	By March 2022: H (14) M (13) L (12)	By March 2022: H (15) M (14) L (13)	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				
	Source						
	IMF reporting						
Output Indicator 4.3		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
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 (154) M (150) L (146)	By March 2023: H (170) M (166) L (164)	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				
	Source						
	IMF reporting						
Output Indicator 4.4		**Baseline**	**Milestone 1**	**Milestone 2**	**Target (March 2023)**		
Project Outputs disseminated in e-newsletter and up-dated public web-page and R4D (DFID web portal). Number of updates of e-newsleter and/or web-page:	**Planned**	March 2017 (18)	By March 2021, number of up-dates: H (34) M (32) L (31)	By March 2019, number of up-dates: H (26) M (24) L (22)	By March 2020, number of up-dates: H (30) M (27) L (24)	Specific context: the average output per year (Yr 1 - 5) is 4, 2.92 for M, 1.84 for L	
	Achieved		34				
	Source						
	IMF reporting						

APPENDIX 2. FINANCIAL REPORTS

International Monetary Fund
United Kingdom - Project on Macroeconomic Research in LICs
Bilateral - Cash Flow Statement
As of Apr 30, 2021
(In U.S. Dollars)

	Cumulative FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Total
Contributions[1/]	12,717,569	4,537,586	2,368,482	1,968,935	2,088,790	-	23,681,362
Interest Earned	10,333	19,702	35,135	56,743	41,005	236	163,154
Total Cash Available	12,727,902	4,557,288	2,403,617	2,025,678	2,129,795	236.43	23,844,516
Expenses Paid[2/]	9,692,537	3,768,706	2,937,652	2,490,122	1,892,694	1,790,324	22,572,035
Cash Balance	3,035,365	3,823,947	3,289,912	2,825,468	3,062,569	1,272,481	1,272,481

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 Apr 30, 2021
(In U.S. Dollars)

Region/Country	Project ID	Project Description	Status	Start Date	End Date	Latest Approved/ Proposed Budget	Expenses	Remaining Balance [1/]	Execution (%)[2/]
						26,990,088	21,095,362	5,249,770	
International Monetary Fund	IMF_IMF_2012_01	DFID Macro Research 1&2	Closed	5/1/2012	3/31/2017	12,451,409	12,451,410	-	-
		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	4/1/2017	3/31/2020	7,636,631	6,991,674	-	-
		HQ led missions including entire mission team				556,600	389,849	-	-
		Short-term Advisors - CD delivery				90,000	48,460	-	-
		Research HQ based / Visiting Scholars				4,716,522	4,677,110	-	-
		Seminars & Study Tours				609,290	400,115	-	-
		Project Backstopping				1,092,202	1,054,899	-	-
		Project Management				122,494	84,611	-	-
		Exceptional Expenses				446,523	335,282	-	-
		Language Services				3,000	1,348	-	-
International Monetary Fund	SPR_IMF_2020_02	DFID-4 Macro Research	Approved	4/1/2020	3/31/2023	6,902,048	1,652,278	5,249,770	24%
		HQ led missions including entire mission team				273,283	22,202	251,081	8%
		Short-term Advisors - CD delivery				20,000	-	20,000	-
		Research HQ based / Visiting Scholars				4,953,001	1,185,909	3,767,092	24%
		Seminars & Study Tours				248,633	-	248,633	-
		Project Backstopping				1,004,639	207,321	797,318	21%
		Project Management				95,052	20,668	74,384	22%
		Exceptional Expenses				280,764	215,356	65,408	77%
		Language Services				26,676	822	25,854	3%
Sub Total						26,990,088	21,095,362	5,249,770	
Trust Fund Management Fee						1,889,306	1,476,675	367,484	
Grand Total						28,879,394	22,572,037	5,617,254	

Agreement Summary	
Contributions to date	23,681,361
Net Transfers	-
Interest Earned	163,154
Total Inflows(A)	23,844,515
Expenses	22,572,037
Remaining Budget (including projects pending approval)	5,617,254
Total Outflows(B)	28,189,291
Future Contributions (based on signed agreements)(C)	4,740,658
Total Available & Future Contributions(A-B+C)	395,882

1/ The remaining balance for closed projects is zeroed out upon project completion for reallocation of resources or return to donor.
2/ For active projects only.

APPENDIX 3. RESEARCH OUTPUTS

Output 1.1 – Working Papers

Topic 1. Modelling and understanding policy choices

1. Do Monetary Policy Frameworks Matter in Low Income Countries?
   Alina Carare, Carlos de Resende, Andrew T. Levin, and Chelsea Zhang

   Summary: In recent years, many Low-Income Countries (LICs) have implemented substantial reforms to their monetary policy frameworks, but existing economic research has not provided a clear rationale to guide those efforts. In this paper we analyze the role of monetary policy frameworks in the propagation of aggregate shocks, using a large panel dataset of 79 LICs over the period 1990-2015 as well as event study analysis for a group of 28 sub-Saharan African LICs. We find highly significant differences in the propagation of external shocks between the LICs that target monetary aggregates or inflation compared to those that maintain rigid nominal exchange rates as a nominal anchor. We also find that the large surprise devaluation of the Central African Franc (CFA) in January 1994 had highly significant effects on the GDP growth of 10 CFA countries compared to 18 similar countries that were outside the CFA zone. Our empirical analysis provides strong support for the role of monetary policy frameworks in facilitating macroeconomic stability in LICs—a conclusion that is particularly relevant as LICs now face a multitude of similar shocks associated with the global COVID-19 pandemic.

2. Quarterly Projection Model for the National Bank of Rwanda
   Jan Vlcek, Mikhail Pranovich, Patrick Hitayezu, Bruno Mwenese, and Christian Nyalihama

   Summary: National Bank of Rwanda (BNR) modernized monetary policy and transited to the price-based policy framework in January 2019. The Forecasting and Policy Analysis System (FPAS) is the cornerstone for the new forward-looking framework, which mobilizes and organizes resources and sets processes for regular forecasting rounds. The core of this system is a structural macroeconomic model for macroeconomic analysis and projections to support the BNR staff's policy recommendations to the monetary policy committee. This paper documents the quarterly projection model (QPM) at the core of the FPAS at the BNR. The model is an extension of the canonical structure in Berg et al (2006) to reflect specifics of the interest-rate-based policy framework with a managed exchange rate, the effect of agricultural sector and harvests on prices, and the role of fiscal policies and aid flows.

3. Public Investment over the Fiscal Cycle
   Chapter 6 in Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment?, edited by Gerd Schwartz, Manal Fouad, Torben Hansen and Genevieve Verdier, pp. 85-105.
   Tannous Kass-Hanna Kangni Kpodar and Dawit Tessema

   Summary: In this paper, Tannous Kass-Hanna, Kangni Kpodar, and Dawit Tessema investigate the growth dividends to developing countries of shifting public spending composition towards public investment during fiscal cycles. Using general equilibrium and empirical models, the study shows that protecting investment spending during consolidations – although contractionary in the short-term – boosts medium- to long-term growth. The growth benefits are particularly large when the initial public investment ratio is low. Increasing the share of public investment in total government spending from 10 to 20 percent raises medium-term growth by 0.5 percentage points. These results hold both during good times (when consolidations are observed) and bad times (when consolidations are warranted).

4. To Pass (or Not to Pass) Through International Fuel Price Changes to Domestic Fuel Prices in Developing Countries: What Are the Drivers?
   Kangni R Kpodar and Patrick A. Imam

   Summary: While many developing countries limit the international fuel price pass through to domestic fuel prices, others do not. Against this backdrop, we examine the factors that determine whether governments allow international fuel price changes to be passed through to domestic prices in developing countries using a dataset spanning 109 developing countries from 2000 to 2014. The paper finds that the pass-through is higher when changes in international prices are moderate and less volatile. In addition, the flexibility of the pricing mechanism allows for higher pass-through while exchange rate depreciation and lower retail fuel prices in neighboring countries inhibit it. The econometric results also underscore the fact that countries with inflation tend to experience lower pass-through, whereas those with high public debt exhibit larger pass-through. Finally, no evidence is found that political variables or environmental policies matter with regard to fuel price dynamics in the short-term. These findings, which are consistent across fuel products (gasoline, diesel and kerosene), allow us to draw important policy lessons for fuel subsidy reforms.

5. Imported Food Price Shocks and Socio-Political Instability: Do Fiscal Policy and Remittances Matter?
   Carine Meyimdjui

   Summary: Using a panel of 101 low- and middle-income countries with data covering the period 1980-2012, this paper applies various econometric approaches that deal with endogeneity issues to assess the impact of food price shocks on socio-political instability once fiscal policy and remittances have been accounted for. It focuses on import prices to reflect the vulnerability of importer countries / net-buyer households to food price shocks. The paper finds that import food price shocks strongly increase the likelihood of socio-political instability. This effect is greater in countries with lower levels of private credit and income per capita. On the other hand, while remittances seem to dampen the adverse effect of import food price shocks on socio-political instability in almost all countries, the mitigating role of fiscal policy is significant only in countries with low-levels of private credit.

6. [Food Price Shocks and Household Consumption in Developing Countries: The Role of Fiscal Policy]
   Carine Meyimdjui and Jean-Louis Combes

   Summary: This paper studies whether fiscal policy plays a stabilizing role in the context of import food price shocks. More precisely, the paper assesses whether fiscal policy dampens the adverse effect of import food price shocks on household consumption. Based on a panel of 70 low and middle-income countries over the period 1980-2012, the paper finds that import price shocks negatively and significantly affect household consumption, but this effect appears to be mitigated by discretionary government consumption, notably through government subsidies and transfers. The results are particularly robust for African countries and countries with less flexible exchange rate regimes.

7. [Building Back Better: How Big Are Green Spending Multipliers?]
   Nicoletta Batini, Mario di Serio, Matteo Fragetta, Giovanni Melina, and Anthony Waldron

   Summary: This paper provides estimates of output multipliers for spending in clean energy and biodiversity conservation, as well as for spending on non-ecofriendly energy and land use activities. Using a new international dataset, 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. Although not all green and non-ecofriendly expenditures in the dataset are strictly comparable due to data limitations, estimated multipliers associated with spending on renewable and fossil fuel energy investment are comparable, and the former (1.1-1.5) are larger than the latter (0.5-0.6) with over 90 percent probability. These findings survive several robustness checks and lend support to bottom-up analyses arguing that stabilizing climate and reversing biodiversity loss are not at odds with continuing economic advances.

8. [Delays in Public Investment Projects]
   Raphael Espinoza and Andrea Presbitero

   Summary: The returns from public investment, especially during periods of scaling up, are often lower than expected. To understand the mechanisms behind this regularity we exploit original information on investment projects obtained from World Bank project reports to document the extent and the drivers of time delays in project implementation. We find that almost 60 percent of investment projects are delayed by at least one year. Time overruns are common across sectors and countries. A sound planning and preparation matter for the timing of project execution. Country characteristics also play a role, as projects undertaken in countries with weaker institutions and in periods of public investment scaling up are completed with longer delays.

9. Monetary Policy Frameworks: An Index and New Evidence
Chris Papageorgiou, D. Filiz Unsal and Hendre Garbers
Forthcoming IMF Working Paper

Summary: The paper provides a multidimensional characterization of monetary policy frameworks (MPFs) consisting of four pillars: Independence and Accountability, Policy Strategy, Operational Strategy, and Communications. The IAPOC index captures the soundness of MPFs and challenges the existing paradigm of monetary policy regime classifications. We construct the index for 35 developing and developed economies 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.

10. IMF Capacity Development on Monetary Policy Forecasting and Policy Analysis Systems (FPAS): Taking Stock
ICD-MCM Joint Departmental Paper
Forthcoming IMF Working Paper

Summary: This paper takes stock of FPAS capacity development (CD), drawing extensively on the experience and lessons learned from developing FPAS capacity in LIC 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 practice within the Fund 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.

11. An Open Economy Quarterly Projection Model for Malawi
Yaroslav Hul, Grant P. Kabango, Kisukyabo Simwaka, Austin Chiumia, Wytone Jombo, Marietta Mpingasa, and Shalva Mkhatrishvili
Forthcoming IMF Working Paper

Summary: Modeling a macro-economy of a developing nation is a difficult undertaking. Compared to advanced economies where key macroeconomic stylized facts are well-documented and time series data is abundant and consistent, understanding the workings of the economy in a developing country is a challenge, given often scarce research and limited macroeconomic data. That is why a semi-structural model, known for its flexibility, can be an extremely useful addition to a central bank's modeling toolkit. The so-called Quarterly Projection Model (QPM) helps organize policy analysis in a central bank in a systematic way and generate an internally coherent policy path consistent with medium-term developments of macroeconomy and monetary policy objectives. This paper – joint with the Reserve Bank of Malawi (RBM) -- documents QPM at the core of the Forecasting and policy Analysis System (FPAS) at the RBM. The model is built and calibrated to reflect a number of Malawi-specific stylized facts, including the importance of agricultural sector for GDP and its effect on domestic food prices, the effects of central bank credibility, and the characteristics of interest-rate-based monetary policy in the presence of fiscal pressures.

Topic 2. Understanding macro-financial linkages

We have no publication under this output this year.

Topic 3. Building resilience

12. Building Resilience to Natural Disaster in Vulnerable States: Savings from Ex Ante Interventions
    Chapter 9 in *Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment?*, edited by Gerd Schwartz, Manal Fouad, Torben Hansen and Genevieve Verdier, pp. 154-171
    Wei Guo and Saad Quayyum

    Summary: In this research Wei Guo and Saad Quayyum assess the trade-off in building resilient infrastructure against natural disasters between exante and ex-post approaches. The authors use dynamic and general equilibrium and empirical models and calibrate their structural model to six small countries that are highly vulnerable to natural disasters. The results suggest that policy makers can save in net present value terms by investing in ex-ante resilience and avoiding large recovery costs. In addition, increasing the elasticity of output to infrastructure by improving governance would also leads to sizable output gains from the baseline. The finding underscores the importance of mobilizing more resources to build resilient infrastructure against natural disaster and climate change.

13. Enhancing Resilience to Climate Change in the Maldives
    Giovanni Melina and Marika Santoro

    Summary: 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 paper analyzes these challenges, through calibrating a general equilibrium model. 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. We also show 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.

Topic 4. Promoting structural change and institutional development

14. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions
    Daron Acemoglu and Alireza Tahbaz-Salehi

    Summary: This paper studies how firm failures and the resulting disruptions to supply chains can amplify negative shocks. We develop a non-competitive model where customized supplier-customer relations increase productivity, and the relationship-specific surplus generated between firms and their suppliers is divided via bargaining. Changes in productivity alter the distribution of surplus throughout the economy and determine which firms are at the margin of failure. A firm's failure may spread to its suppliers and customers and to firms in other parts of the production network. We provide existence, uniqueness, and a series of comparative statics results, and show how the response of the equilibrium production network may propagate recessionary shocks.

15. Will the AI Revolution Cause a Great Divergence?
    Cristian Alonso, Andrew Berg, Siddharth Kothari, Chris Papageorgiou and Sidra Rehman

    Summary: This paper considers the implications for developing countries of a new wave of technological change that substitutes pervasively for labor. It makes simple and plausible assumptions: the AI revolution can be modeled as an increase in productivity of a distinct type of capital that substitutes closely with labor; and the only fundamental difference between the advanced and developing country is the level of TFP. This set-up is minimalist, but 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. In addition, capital—if internationally mobile—is pulled "uphill", resulting in a transitional GDP decline in the developing country. In an extended model where robots substitute only for unskilled labor, the terms of trade, and hence GDP, may decline permanently for the country relatively well-endowed in unskilled labor.

16. Is Regional Trade Integration a Growth and Convergence Engine in Africa?
    Vigninou Gammadigbe

    Summary: The main objective of Regional Trade Agreements (RTAs) is to stimulate economic growth in participating countries through increased trade, economies of scale, knowledge and technology transfer. Using a panel data over the period 1979 to 2018, this paper examines the contribution of regional trade integration (RTI) to economic growth and income convergence in Africa and its major Regional Economic Communities (RECs). The results of the instrumental variable and panel fixed-effects estimation show that RTI promotes economic growth in Africa. However, it fosters income divergence, reflecting the distribution of the gains from regional integration in favor of the more developed economies of the continent. The results of this study show the importance to support the African Continental Free Trade Area (AfCFTA) project with policies aimed at reducing non-tariff

barriers to trade and improving infrastructure in order to maximize the effects on growth in all participating countries.

17. Socio-Economic Spillovers from Special Economic Zones: Evidence from Cambodia
Mariya Brussevich

Summary: This study examines the socio-economic impact of special economic zones (SEZs) in Cambodia---a prominent place-based policy established in 2005. The paper employs a database on existing and future SEZs in Cambodia with matched household surveys at the district level and documents stylized facts on SEZs in a low-income country setting. To identify causal effects of the SEZ program, the paper (i) constructs an alternative control group including future SEZ program participants and districts adjacent to SEZ hosts; and (ii) employs a propensity score weighting technique. The study finds that entry of SEZs disproportionately benefits female workers and leads to a decline of income inequality at a district level. However, the findings also suggest that land values in SEZ districts tend to rise while wage levels remain largely unchanged relative to other districts. In addition, the paper tests for socio-economic spillovers to surrounding areas and for agglomeration effects associated with clusters of multiple SEZs.

18. Search Externalities in Firm-to-Firm Trade
John Spray

Summary: I develop a model of firm-to-firm search and matching to show that the impact of falling trade costs on firm sourcing decisions and consumer welfare depends on the relative size of search externalities in domestic and international markets. These externalities can be positive if firms share information about potential matches, or negative if the market is congested. Using unique firm-to-firm transaction-level data from Uganda, I document empirical evidence consistent with positive externalities in international markets and negative externalities in domestic markets. I then build a dynamic quantitative version of the model and show that, in Uganda, a 25% reduction in trade costs led to a 3.7% increase in consumer welfare, 12% of which was due to search externalities.

Topic 5. Enhancing inclusion

19. Re-Opening After the Lockdown: Long-run Aggregate and Distributional Consequences of COVID-19
Manoj Atolia, Chris Papageorgiou and Stephen J. Turnovsky

Summary: COVID-19 has dealt a devastating blow to productivity and economic growth. We employ a general equilibrium framework with heterogeneous agents to identify the tradeoffs involved in restoring the economy to its pre- COVID-19 state. Several tradeoffs, both over time, and between key economic variables, are identified, with the feasible speed of successful re-opening being constrained by the transmission of the infection. In particular, while more rapid opening up of the economy will reduce short-run aggregate output losses, it will cause larger long-run output losses, which potentially may be quite substantial if the opening is overly rapid and the virus is not eradicated. More rapid opening of the economy mitigates the increases in both long-run wealth and income inequality, thus highlighting a direct conflict between the adverse effects on aggregate output and its distributional consequences.

20. Macroeconomic Research in Low-income Countries: Advances Made in Five Key Areas Through a DFID-IMF Collaboration
Hites Ahir, Hendre Garbers, Mattia Coppo, Giovanni Melina, Futoshi Narita, Filiz D Unsal, Vivian Malta, Xin Tang, Daniel Gurara, Luis-Felipe Zanna, Linda G. Venable, Kangni R Kpodar and Chris Papageorgiou

Summary: Despite strong economic growth since 2000, many low-income countries (LICs) still face numerous macroeconomic challenges, even prior to the COVID-19 pandemic. Despite the deceleration in real GDP growth during the 2008 global financial crisis, LICs on average saw 4.5 percent of real GDP growth during 2000 to 2014, making progress in economic convergence toward higher-income countries. However, the commodity price collapse in 2014–15 hit many commodity-exporting LICs and highlighted their vulnerabilities due to the limited extent of economic diversification. Furthermore, LICs are currently facing a crisis like no other—COVID-19, which requires careful policymaking to save lives and livelihoods in LICs, informed by policy debate and thoughtful research tailored to the COVID-19 situation. There are also other challenges beyond COVID-19, such as climate change, high levels of public debt burdens, and persistent structural issues.

21. Finance, Growth, and Inequality
Ross Levine
Forthcoming IMF Working Paper

Summary: Finance and growth emerged as a distinct field of economics during the last three decades as economists integrated the fields of finance and economic growth and then explored the ramifications of the functioning of financial systems on economic growth, income distribution. This paper reviews theoretical and empirical research on the connections between the operation of the financial system and economic growth and inequality. While subject to ample qualifications, the preponderance of evidence suggests that (1) financial development—both the development of banks and stock markets—spurs economic growth and (2) better functioning financial systems foster growth primarily by improving resource allocation and technological change, not by increasing saving rates. Research also suggests that financial development expands economic opportunities and tightens income distribution, primarily by boosting the incomes of the poor. This work implies that financial development fosters growth by expanding opportunities. Finally, and more tentatively, financial innovation—improvements in the ability of financial systems to ameliorate information and transaction costs—may be necessary for sustaining growth.

Output 1.2 – Published Papers

Topic 1. Modelling and understanding policy choices

1. To pass (or not to pass) through international fuel price changes to domestic fuel prices in developing countries: What are the drivers?
   Kangni Kpodar and Patrick Amir Imam
   Energy Policy

   Summary: This paper attempts to shed light on the drivers causing international fuel prices to be passed through to domestic retail fuel prices. While many developing countries limit the international fuel price pass through to domestic fuel prices, others do not. In the former, large fuel subsidies can emerge, thereby threatening fiscal sustainability, worsening income distribution and setting back efforts to fight climate change. Against this backdrop, we examine the factors that determine whether governments allow international fuel price changes to be passed through to domestic prices in developing countries using a dataset spanning 109 developing countries from 2000 to 2014. The paper finds that the pass-through is higher when changes in international prices are moderate and less volatile. In addition, the flexibility of the pricing mechanism allows for higher pass-through while exchange rate depreciation and lower retail fuel prices in neighboring countries inhibit it. The econometric results also underscore the fact that countries with inflation tend to experience lower pass-through, whereas those with high public debt exhibit larger pass-through. Finally, no evidence is found that political variables or environmental policies matter with regard to fuel price dynamics in the short-term. These findings, which are consistent across fuel products (gasoline, diesel and kerosene), allow us to draw important policy lessons for fuel subsidy reforms.

2. Export Growth - Fuel Price Nexus in Developing Countries: Real or False Concern?
   Kangni R Kpodar, Stefania Fabrizio, and Kodjovi M. Eklou
   The Energy Journal, forthcoming

   Summary: This paper investigates the impact of domestic fuel price increases on export growth in a sample of 77 developing countries over the period 2000-2014. Using a fixed-effect estimator and the local projection approach, we find that an increase in domestic gasoline or diesel price adversely affects real non-fuel export growth, with the impact phasing out within two years after the shock. The impact is mainly noticeable in countries with a high-energy dependency ratio and where access to electricity is limited. Further, large fuel price shocks do not seem to lead to disproportionately large changes in exports, suggesting that neither the gradualism nor the shock therapy approach in fuel subsidy reforms dominates. In countries where the export sector is vulnerable to fuel price shocks, appropriate mitigating measures should be designed to smooth the transition to higher fuel prices.

3. Designing Labor Market Institutions in Emerging Market and Developing Economies: A Review of Evidence and IMF Policy Advice

Romain Duval and Prakash Loungani
Comparative Economic Studies

Summary: This paper reviews the state of theory and evidence on the design of labor market institutions in emerging markets and developing economies. Compared with advanced economies, these economies tend to have larger market failures, which creates a strong case for government intervention. But they also face larger risks of policy failures due to informality and limited administrative capacity. We draw specific implications from this tension for the design unemployment insurance, job protection legislation, minimum wages and wage bargaining systems. We then use text mining techniques to identify and review a decade of IMF recommendations in these areas for 30 emerging market and developing economies.

4. Delays in Public Investment Projects
   Raphael Espinoza and Andrea Presbitero
   International Economics, forthcoming

   Summary: The returns from public investment, especially during periods of scaling up, are often lower than expected. To understand the mechanisms behind this regularity we exploit original information on investment projects obtained from World Bank project reports to document the extent and the drivers of time delays in project implementation. We find that almost 60 percent of investment projects are delayed by at least one year. Time overruns are common across sectors and countries. A sound planning and preparation matter for the timing of project execution. Country characteristics also play a role, as projects undertaken in countries with weaker institutions and in periods of public investment scaling up are completed with longer delays.

5. On the capacity to absorb public investment: How much is too much?
   Daniel Gurara, Kangni R Kpodar, Andrea F Presbitero and Dawit Tessema
   World Development

   Summary: While expanding public investment can help filling infrastructure bottlenecks, scaling up too much and too fast often leads to inefficient outcomes. This paper rationalizes this outcome looking at the association between cost inflation and public investment in a large sample of road construction projects in developing countries. Consistent with the presence of absorptive capacity constraints, our results show a non-linear U-shaped relationship between public investment and project costs. Unit costs increase once public investment is close to 10% of GDP. This threshold is lower (about 7% of GDP) in countries with low investment efficiency and, in general, the effect of investment scaling up on costs is especially strong during investment booms.

Topic 2. Understanding macro-financial linkages

6. Commodity Prices and Banking Crises
   Markus Eberhardt and Andrea Presbitero

Journal of International Economics, forthcoming

Summary: Commodity prices are one of the most important drivers of output fluctuations in developing countries. We show that a major channel through which commodity price movements can affect the real economy is through their effect on banks' balance sheets and financial stability. Our analysis finds that the volatility of commodity prices is a significant predictor of banking crises in a sample of 60 low-income countries (LICs). In contrast to recent findings for advanced and emerging economies, credit booms and capital inflows do not play a significant role in predicting banking crises, consistent with a lack of de facto financial liberalization in LICs. We corroborate our main findings with historical data for 40 "peripheral" economies between 1848 and 1938. The effect of commodity price volatility on banking crises is concentrated in LICs with a fixed exchange rate regime and a high share of primary goods in production. We also find that commodity price volatility is likely to trigger financial instability through a reduction in government revenues and a shortening of sovereign debt maturity, which are likely to weaken banks' balance sheets.

Topic 3. Building resilience

7. Tropical cyclones and post-disaster reconstruction of public infrastructure in developing countries
   Christopher Adam and David Bevan
   Economic Modelling

   Summary: When natural disasters destroy public capital, these direct losses are exacerbated by indirect losses arising from reduced private output during reconstruction. These may be large in developing countries that lack access to external finance. We develop a general equilibrium model of a small open economy that highlights the relation between public infrastructure and private capital, to examine the effects of natural disasters and alternative reconstruction paths. Calibrating the model to data from the Caribbean Catastrophic Risk Insurance Facility (CCRIF), we examine alternative post-disaster financing mechanisms including reserve depletion, budget reallocation, sovereign disaster insurance, debt and taxation. Disaster insurance is shown to play a limited role in financing reconstruction, while budget re-allocations are potentially damaging especially if they cannibalize operations and maintenance expenditures. Absent donor grants or concessional borrowing, tax financing – where feasible – remains the least damaging financing instrument, particularly if the country risk premium on external debt is high.

Topic 4. Promoting structural change and institutional development

8. Policies in Hard Times: Assessing the Impact of Financial Crises on Structural Reforms
   Gunes Gokmen, Massimiliano Gaetano Onorato, Tommaso Nannicini and Chris Papageorgiou
   Economic Journal, forthcoming

   Summary: It is commonly argued that crises open up a window of opportunity to implement

policies that otherwise would not have the necessary political backing. The argument goes that the political cost of economic and social reforms declines as crises unravel structural problems that need to be urgently rectified and the public is more willing to bear the pains associated with such reforms. This paper casts doubt on this prevalent view by showing that not only the crises-reforms nexus is unfounded in the data, but rather crises are associated with a reversal of liberalization interventions depending on the institutional environment. In particular, we look at measures of liberalization in international trade, agriculture, network industries, and financial markets. We find that, in democratic countries, crises occurrences have no significant impact on liberalization measures. On the contrary, after a crisis, autocracies reduce liberalization in multiple economic sectors, which we interpret as the fear of regime change leading non-democratic rulers to please vested economic interests.

9. Are tariffs bad for growth? Yes, say five decades of data from 150 countries
   Davide Furceri, Swarnali A. Hannan, Jonathan D. Ostry and Andrew K. Rose
   Journal of Policy Modeling

   Summary: The empirical evidence on the growth effects of import tariffs is sparse in the literature, notwithstanding strong views held by the public and politicians. Using an annual panel of macroeconomic data for 151 countries over 1963–2014, we find that tariff increases are associated with an economically and statistically sizeable and persistent decline in output growth. Thus, fears that the ongoing trade war may be costly for the world economy in terms of foregone output growth are justified.

10. Comparing cities in developed and developing countries: Population, land area, building height and crowding
    Remi Jedwab, Prakash Loungani, and Anthony Yezer
    Regional Science and Urban Economics

    Summary: Historically, richer countries have had larger cities than poorer countries. Today, urban giants are no longer concentrated in rich countries. However, there are clear differences in physical city characteristics associated with country incomes. These differences are easily reconciled mathematically as population is the product of land area, structure space per unit land (i.e., heights), and population per unit interior space (i.e., crowding). This paper explores how these components have changed for the whole world and what remains of the association between income and city development using a combination of harmonized old and new databases. We document that cities in richer countries are large because they build “out” and build “up”. Cities in poorer countries have become as large because they have crowded “in”. Therefore, similar city sizes now hide stark differences in physical urban development. We also show how the Standard Urban Model can account for both similarities and differences in physical urban development across countries.

Topic 5. Enhancing inclusion

11. Does an Inclusive Citizenship Law Promote Economic Development?
    Patrick Amir Imam and Kangni Kpodar
    Review of Law & Economics

    Summary: This paper analyzes the impact of citizenship laws on economic development. We first document the evolution of citizenship laws around the world, highlighting the main features of jus soli, jus sanguinis as well as mixed regimes, and shedding light on the channels through which they could have differentiated impact on economic development. We then compile a data set of citizenship laws around the world. Using cross-country regressions, panel-data techniques, as well as the synthetic control method and subjecting the results to a battery of tests, we find robust evidence that jus soli laws—being more inclusive—lead to higher income levels than alternative citizenship rules in developing countries, though to a less extent in countries with stronger institutional environment.

12. Gender equality and macroeconomic outcomes: evidence and policy implications
    Lisa Kolovich, Vivian Malta, Monique Newiak, and David Robinson
    Oxford Review of Economic Policy

    Summary: A large and growing literature has associated gender equality with better macroeconomic outcomes. However, understanding the channels through which gender equality impacts the economy requires a deeper dive in the main constraints within an economy. Using theoretical and empirical evidence, this research explores how gender equality in education feeds into higher human capital levels and thus better macroeconomic outcomes. It also analyses the impact of inequities in the labour market, focusing also on the role of the informal sector. Finally, it provides an overview on policy options to address various gender gaps.

13. Re-opening after the lockdown: Long-run aggregate and distributional consequences of COVID-19
    Manoj Atolia, Chris Papageorgiou, and Stephen J.Turnovsky
    Journal of Mathematical Economics

    Summary: COVID-19 has dealt a devastating blow to productivity and economic growth. We employ a general equilibrium framework with heterogeneous agents to identify the tradeoffs involved in restoring the economy to its pre- COVID-19 state. Several tradeoffs, both over time, and between key economic variables, are identified, with the feasible speed of successful re-opening being constrained by the transmission of the infection. In particular, while more rapid opening up of the economy will reduce short-run aggregate output losses, it will cause larger long-run output losses, which potentially may be quite substantial if the opening is overly rapid and the virus is not eradicated. More rapid opening of the economy mitigates the increases in both long-run wealth and income inequality, thus highlighting a direct conflict between the adverse effects on aggregate output and its distributional consequences.

Book chapters (for information only)

1. WELL SPENT: How Strong Infrastructure Governance Can End Waste in Public Investment: "Public Investment over the Fiscal Cycle".

2. WELL SPENT: How Strong Infrastructure Governance Can End Waste in Public Investment: "Building Resilience to Natural Disaster in Vulnerable States: Savings from Ex Ante Interventions".

Output 1.3 – Freely available books

We have no publication under this output this year.

Output 1.4 – Advisory group meeting

We have no meeting under this output this year.

Output 2.1 – Country applications with IMF Country Teams

FPAS framework
We have no publication under this topic this year.

Diversification
We have no publication under this topic this year.

DIG/Investment scaling up/Debt sustainability

1. Application of DIGNAR-19 model to Nigeria (Article IV)

   Summary: IMF staff estimated the impact of a global and domestic resurgence of the COVID-19 pandemic on growth and public debt in Nigeria for the IMF's Article IV consultation with the authorities. The model used is a dynamic general equilibrium model, DIGNAR-19 (Melina and Zanna, 2020), combined with an epidemiological multigroup susceptible-infectious-removed (SIR) model (Cugat, 2020). Simulations show that the COVID-19 resurgence would take a heavy toll on the Nigerian economy, with GDP contracting by 1.7 percent in 2021 and the public-debt-to-GDP ratio continuing to increase in the medium term.

2. Application of DIGNAR-19 model to Nigeria (Selected Issues)

   Summary: The IMF's DIGNAR-19 model, which is a combination of a dynamic macroeconomic model and a SIR epidemiological model, is used to simulate the impact of a second wave of infections starting in 2021Q1 on Nigeria, based on the assumptions that the Nigerian government (1) adopts a mild lockdown reducing contacts by one third of the reduction experienced during the more severe lockdown of April 2020; and (2) increases health-related expenditures by 0.2 percent of GDP in 2021. In addition, under this scenario, oil prices are assumed to tumble in 2021, averaging at $30 per barrel; and the sovereign bond spread on external commercial debt would rise to 3 percentage points, similar to the increase in 2020Q1. With these assumptions, GDP is projected to contract by 1.7 percent in 2021, and the fiscal deficit is expected to worsen by 1 - 1.5 percent of GDP per year for the medium term, reflecting mainly the loss of oil and non-oil revenue, and to a smaller extent, the increase in public health spending and borrowing costs. Public debt would rise to 41.4 percent of GDP by 2024, i.e. 5.9 percent of GDP higher than in the baseline scenario.

3. Using Macroeconomic Frameworks to Analyze the Impact of COVID-19

   Summary: This technical note and manual (TNM) addresses the following issues: Evaluating the full implications from the policies adopted to mitigate the impact of the COVID-19 pandemic on the economy requires a well-developed macroeconomic framework. This note illustrates how such frameworks were used to analyze Colombia and Cambodia's shock impact at the beginning of the pandemic. The use of macroeconomic frameworks is not to infer general policy conclusions from abstract models or empirical analysis but to help policymakers think through and articulate coherent forecasts, scenarios, and policy responses. The two country cases illustrate how to construct a baseline scenario consistent with a COVID-19 shock within structural macroeconomic models. The scenario is built gradually to incorporate the available information, the pandemic's full effects, and the policy responses. The results demonstrate the value of combining close attention to the data, near-term forecasting, and model-based analyses to support coherent policies.

4. Internal note: A Multigroup SIR Model to Analyze COVID-19 Scenarios

   Summary: This note presents an epidemiological multigroup SIR model to analyze alternative scenarios of containment policies and exit strategies for COVID-19. Multigroup models can be better tailored to capture heterogeneity in the evolution of the disease or in containment policies across age-groups, sectors of work, etc. The model presented in this note captures key issues in the containment of COVID-19, such as testing, quarantine, healthcare saturation, temporary immunity and vaccination.

5. Internal note: DIGNAR-19: A Model for Macro Policy Assessments of the COVID-19 Pandemics in LIDCs

   Summary: This note extends the DIGNAR model to help country teams assess quantitatively the macroeconomic effects of the COVID-19 pandemic and related policy responses in Low-Income-Developing Countries (LIDCs). The original model has been used at the Fund in the context of program and surveillance work. The extended version incorporates the main shocks (and channels) related to the ongoing pandemic, such as those associated with lockdown policies and health containment measures, oil prices and exports, non-oil trade, and external financing. Furthermore, it allows to study the mitigating effects of national and supranational policies (e.g., aid and transfers). The note illustrates the output of the model-based analysis. This comprises the effects on some key macro variables (GDP, public debt, private consumption, the real exchange rate, and the current account), as captured by the impulse responses to the COVID-19-related shocks, the contribution to these effects by each shock, as well as the simulations of policies that may mitigate and, therefore, shape these effects.

6. Internal note: COVID-19 and Government Debt Dynamics in Low-Income Developing Countries
   Summary: As a result of the COVID-19 pandemic, the government debt outlook in low-income developing countries (LIDCs) is challenging. This assessment, intended for internal use only, is based on calibrations and simulations of DIGNAR-19, a structural dynamic general equilibrium model, presented in a previous RES COVID-19 note. The model accounts for the main shocks that LIDCs are experiencing, with varying degree, due to the pandemics (lockdown, health-related government spending shocks, oil, trade, and external finance). The lockdown shock is calibrated using a multigroup SIR model. Absent more multilateral support, restructurings, and/or fiscal consolidations, government debt in the average LIDC is expected to increase by 5 percent of GDP in 2020 and by almost 12 percent of GDP in 2024. In the most vulnerable LIDCs (about 20 percent of the countries), government debt will increase between 13 percent and 22 percent of GDP by 2024, raising

serious sustainability concerns. These simulations, which are subject to significant downside risks, are an illustration of possible GDP and debt outcomes, abstracting from policy advice.

Natural disasters
We have no publication under this topic this year.

Income and Gender Inequality
We have no publication under this topic this year.

IAPOC Toolkit – An Assessment Toolkit for Monetary Policy Frameworks
We have no publication under this topic this year.

Other

7. Internal and External note: Central Bank Communication Through COVID-19

   Summary: The uniqueness and severity of the COVID-19 shock has forced central banks around the world to relent priority to crisis management objectives and consequently respond in ways that go beyond conventional monetary policy. So far, these crisis responses in AEs and EMDEs have included advancing the flexibility with which monetary policy is formulated—such as reducing policy rates to near zero—and adopting new crisis measures—such as quantitative easing, foreign exchange intervention, or debt monetization. This note provides guidance on how central banks can communicate any such crisis measures without compromising their existing monetary policy frameworks and longer-term focus on price stability, or their credibility.

8. Internal note: Food (in)security in SSA under COVID-19: a macro perspective

   Summary: This note provides an overview of the macroeconomic channels through which food (in)security in Sub-Saharan Africa (SSA) may be impacted in the context of COVID-19. While crop production prospects for 2020/2021 remain positive and stable at a global level, the potential repercussions of the COVID-19 shock on both the availability and affordability of food in the region may be severe. In particular, disruptions and risks to domestic food production, imports and supply chains, together with volatile—and rising—domestic and imported food prices, on the back of falling incomes, remain concerning. Alleviating risks to food security may need to be a key component of SSA's response to the COVID-19 shock as it continues to affect the global economy and the region.

9. Internal note: Severe Epidemics in Modern History: Growth, Debt and Civil Unrest

   Summary: This note examines the economic and political consequences of past severe epidemics since the beginning of the 20th century to shed light on the potential impact of the COVID-19 crisis. The new epidemics database constructed for this analysis covers more than 200 countries for the period of 1900-2019. Epidemics are often related to trade openness. Although severe epidemics are rare, they have significantly negative effects on growth and debt that last for at least a decade. In the initial onset year, severe epidemics lower real GDP growth by about 5%. Even 10 years later, the level of GDP still does not recover to the pre-epidemic trend. Following the outbreak, public debt (as a share of GDP) also rises, peaking in the sixth year at 20% higher than the level it would have been had the epidemic not taken place and does not return to its pre-epidemic trend for a decade. Severe epidemics also tend to be followed by heightened risks of civil unrest (e.g. riots and major government crises), particularly over the medium term.

10. Internal note: What we can learn from past health-related shocks identified by surges in Google online search volume

    Summary: This note provides an estimate of the economic impact from a severe health-related shock such as COVID-19 epidemics, using a surge in Google online search volume to identify shocks. The estimated average impacts are more severe and persistent for lower-income economies, with an L-shaped decline in real GDP by 4-7 percent, compared to a 3 percent decline dissipating in a couple of years for higher-income economies. Furthermore, combined with cross-border effects under the COVID-19 pandemic, the overall impact could be doubled for lower-income economies.

11. Internal work: produce poverty nowcast for 2020 for the WEO team

    Summary: Real-time estimates on the share of people under extreme poverty have been produced and kept being updated according to the updates in the WEO projections since the January 2021 WEO vintage. The estimates have been informing the IMF's assessments on COVID-19 impacts on extreme poverty in member countries. Based on the projections under the April 2021 WEO vintage, the projected declines in per capita income due to the COVID-19 crisis imply that 95 million more people fell in extreme poverty in 2020 than we had expected prior to the pandemic. Among them, 50 million would be in India, 23 million would be in sub-Saharan African countries such as Kenya and Nigeria, and 22 million would be in others such as Bangladesh.

Output 2.1.a – Courses offered to IMF staff

1. Module 1. Overview and General Macroeconomic Policy in Fragile and Conflict-Affected States

   Summary: This module will present the salient characteristics of Fragile and Conflict-Affected States (FCS), highlight the challenges facing policy design and implementation, and discuss feasible solutions to help these states manage and, in some cases, exit fragility. These policies will be covered in more detail in future modules. The second session develops the macroeconomic framework that highlights what's different about FCS. In particular, the framework presents fragility as endogenous to the political economy equilibrium. The possibility that fragility could lead to state failure is endogenized within a standard microframework. This is shown to constrain the number and choice of feasible policy tools FCS could implement, as well as the advice provided by IFIs and other stakeholders, as they engage with such states.

2. Module 2. Governance. Operating in a Fragile Environment

   Summary: This module comprises two sessions: the first session, professor Collier will set the stage by focusing on the social, political and economic factors that characterize fragile states. Next, he will highlight how to identify "pivotal moments," where FCS could possibly escape fragility, and the steps that governments in such situations could take to exit fragility. He will also highlight where the role of IFIs could be most effective in such countries. The second session will examine the unique challenge of confronting governance vulnerabilities and corruption in FCS. It will briefly present the key pillars under the 2018 IMF Framework on Enhanced Engagement on Governance and Corruption and discuss the progress in its implementation. The session will then consider the key features of FCS and the experience to date of confronting corruption in fragile contexts. The objective is, inter alia, to explain the centrality of corruption in the governance dynamics in FCS including considering the recent COVID crisis, and the unique issues encountered in fighting corruption in these jurisdictions. In that context, there will be some lessons learned about the elements of effective anti-corruption efforts in fragile environments, and ways that external parties, such as IFIs and donors, can support country-led engagements. Finally, the session will consider the Fund approach. Drawing on positive examples of Fund engagement on governance and corruption in the past, the presentation will focus on lessons learned in overcoming the specific implementation challenges in FCS including the timing, sequencing, and resource constraints and allocation.

3. Module 3. Fiscal. Building Fiscal Institutions in a Fragile Environment

   Summary: This is module comprises two sessions: the first session highlights the complex web of causal relationships which connect fiscal capacity and state fragility. Common definitions of fragility and their failure to provide policy makers with an early warning will be discussed. Next, both a broad, qualitative definition of fragility and a definition based on text analysis and machine learning which provides a quantitative but narrow measure of fragility will be presented. The question as to why building fiscal capacity is particularly hard in fragile contexts will be tackled, by showing how the state, society, and the economy interact with fragility. The session concludes with take-away messages for decision-makers who want to build fiscal capacity in fragile contexts. The second session presents concrete steps toward building or restoring fiscal institutions in fragile states, based on IMF's extensive technical assistance programs in FCS. A two-step approach to designing and implementing tax revenue and public financial management reforms in fragile states will be presented. Reforms to build fiscal institutions in fragile states need to be sequenced to reflect country-specific circumstances, including countries' absorptive capacity and initial conditions. In the first stage, the focus should be on using available administrative capacity for effective tax collection and developing core public financial management functions with easy-to-implement measures. In the second stage, the focus can shift to more medium-term revenue and public financial management strategies to help countries exit fragility. Country authorities should lead coordination efforts, with technical assistance providers playing a supportive role. Finally, the session will discuss the role of fiscal conditionality in IMF programs in fragile states and how it should focus more on the medium- and long-term aspects of institution building.

4. Module 4. Monetary, External, and Financial Sector

   Summary: This module comprises two sessions. In the first session, Professor Adam will document monetary and exchange rate policy aspects of countries' descent into, and exit from, economic fragility to draw out some key normative policy lessons for fragile countries and their external partners. Next, he will offer simple analytical narratives of how formerly stable monetary regimes are undermined in the face of increased state fragility. Finally, he will then discuss monetary and exchange rate policy choices in the context of the exit from fragility, including in post-conflict settings where the priority is on the restoration of macroeconomic balance. In the next session, Professor Fullenkamp will highlight the types of inflows into Fragile and Conflict-Affected States (FCS) and examine the presumption that it is always better to have more financial flows to fragile states. He will focus on the effects of the capital and income flows on fragile state economies and estimate the correlations between each financial flow and underlying dimensions of fragility. Using bivariate Granger causality tests, he will investigate the relationship between financial flows and dimensions of fragility. Finally, he will show that fragility does appear to affect the impacts of the various financial flows on economic growth, poverty, and employment. Finally, Mr. Barajas will provide an overview of financial underdevelopment in FCS while stressing the fact that some fragile states overperform on one or several aspects of financial development. Using various measures, he will highlight the state of finance in fragile states relative to the rest of the world and identify the gaps between these two groups. The session will then focus on the causes for financial underdevelopment in FCS, estimate the potential cost of financial underdevelopment, and provide possible remedies for this phenomenon in FCS.

5. Module 5. Fund Policy in FCS (Fragile and Conflict-Affected States)

   Summary: This module comprises two sessions. In the first session, Mr. de Las Casas (IEO) will discuss some of the findings of the IEO evaluation "The IMF and Fragile States," published in 2018. Rather than covering all the ground within the scope of the evaluation, the presentation will focus on its most immediately useful and operational conclusions. First, Mr. de Las Casas will discuss the characteristics of FCS that shape the Fund's engagement with these economies. Then he will turn to the aspects of this engagement that the evaluation identified as critical for the Fund's success in supporting these states. The second session, presented by SPR colleagues, is dedicated to Fund engagement with FCS, including during the COVID crisis along with principles of program and conditionality design. Various aspects distinguish FCS, requiring a unique approach for Fund engagement with those members. The presentation will first discuss the key drivers of fragility, Management commitment to FCS, and recent developments in Fund engagement with FCS. Specifically, speakers will discuss the Fund methodology to identify FCS, the ongoing work of the inter-departmental task force, and recent enhancement of Fund policies to strengthen engagement. Given the ongoing COVID crisis, FCS are expected to suffer deeper scarring in growth and exports than non-FCS, and their debt levels are set to increase significantly. The Fund has acted swiftly to assist members during the pandemic, including through enhancing the lending policy framework and providing extensive debt service relief to the poorest countries, which largely benefits FCS. Speakers will introduce the new lending strategy in response to COVID and details of the lending policy enhancements. Finally, the presentation will underscore that FCS deserve a unique approach to program and conditionality design. Speakers will present the guiding principles of program design for FCS, lessons of program and conditionality design, and country case studies.

6. Module 6. Operationalizing Fund Policy in FCS (Fragile and Conflict-Affected States)

   Summary: The first five modules focused on what, this module turns to how. With the participation of four distinguished FCS Mission Chiefs (Carol Baker, Tokhir Mirzoev, Mika Saito, and Charalambos Tsangarides), the Deputy Director in charge of Fragile States (Franck Bousquet), the lead authors of the new book Macroeconomic Policy in Fragile States (Ralph Chami and Raphael Espinoza), and Professor Robert Klitgaard, participants in this module will explore operational challenges and practical lessons from FCS experience. The IMF is giving a new priority to fragile and conflict-affected states (FCS, also called countries experiencing fragility, conflict, and violence, or FCV). But fragile and conflict-affected situations pose different challenges for macroeconomic policy and, more broadly, for the relationships these countries have with international institutions. As a result, the "what" of both macroeconomic diagnosis and policies in FCS will differ from in other countries. The "how" of the Fund's interactions with FCS countries will also differ in many cases.

7. Macroeconomic Consequences of Remittances in LMICs and FCS

   Summary: This seminar will provide a tour-de-force through the growing literature on the macroeconomic impact of these private income flows in recipient countries, and discuss policy implications for LMICs and Fragile States, as well as for Fund policy advice, especially in light of the unfolding COVID-19 crisis. Prior to this crisis, remittances had become the main flows into LMICs and Fragile States, bypassing portfolio flows and ODA. In 2019, remittance flows stood at over 500 billion US dollars per year, and amounted to 2 percent of GDP on average for all emerging market and developing economies, while foreign direct investment (FDI) represented 3 percent, portfolio investment amounted to nearly 1 percent, and official transfers (foreign aid) are just over ½ percent. About 115 countries received remittances equivalent to at least 1 percent of their GDP, and 19 countries received over 15 percent or more. Remittances are known to be good for the recipient household; increasing welfare and reducing poverty. Compared with private capital or official aid flows, these flows have been more stable—their cyclical volatility has proved to be appreciably lower—and they suffered a much milder contraction following the 2008 global financial crisis. Remittances are also a sizeable source of foreign income, and a good source of revenue for the government in the recipient countries.

8. 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 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.

Output 2.2 – Uptake by Country Authorities

1. Three Virtual FPAS TA mission to Ghana

   Summary: The IMF-FCDO team continues to collaborate closely with the Bank of Ghana (BoG) in its effort to build effective macroeconomic framework for the monetary policy and modernize its forecasting and policy analysis capacity. As part of this initiative, the IMF delivered three virtual FPAS TA missions to Ghana—in July and September 2020 and March 2021. The missions assisted the BoG in continued development of FPAS capacity, including by further supporting the BoG's forecasting team with model-based assessment during the MPC cycles amidst the COVID-19 crisis and extending the in-house Quarterly Projection Model (QPM).

Output 2.2.a – Courses offered to country authorities

1. 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 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.

2. Are the Remittance Flows Another Casualty of COVID-19? at Joint Vienna Institute

   Summary: The COVID-19 pandemic is crippling the economies of rich and poor countries alike. For many low-income and fragile states, the loss of remittances—money sent home by migrant and guest workers employed in foreign countries-will exacerbate the shock. They represent a lifeline that supports households and a steady source of much-needed demand and tax revenue. As of 2018, remittance flows to fragile and vulnerable countries alone reached $350 billion, surpassing foreign direct investment, portfolio investment, and foreign aid as the single most important source of income from abroad. The course will discuss the risks and implications of a drop in remittances on economic, fiscal, and social outcomes. The target audience of the course are officials involved in analyzing and forecasting remittance and their effects on social and economic outcomes.

3. Are the Remittance Flows Another Casualty of COVID-19? at Singapore Training Institute

   Summary: The COVID-19 pandemic is crippling the economies of rich and poor countries alike. For many low-income and fragile states, the loss of remittances—money sent home by migrant and guest workers employed in foreign countries-will exacerbate the shock. They represent a lifeline that supports households and a steady source of much-needed demand and tax revenue. As of 2018, remittance flows to fragile and vulnerable countries alone reached $350 billion, surpassing foreign direct investment, portfolio investment, and foreign aid as the single most important source of income from abroad. The course will discuss the risks and implications of a drop in remittances on economic, fiscal, and social outcomes. The target audience of the course are officials involved in analyzing and forecasting remittance and their effects on social and economic outcomes.

4. Macroeconomic Policy in Fragile States at Africa Training Institute

Summary: Macroeconomic Policy in Fragile States, edited by ICD’s Ralph Chami, FAD’s Raphael Espinoza, and Professor Peter Montiel of the Williams College, offers fresh analyses and perspectives from leading economists, academics, and practitioners on fragile and conflict-affected states. The book explores the consequences of fragility for the formulation and implementation of macroeconomic policy in fragile states while identifying the causes and consequences of fragility.

5. Fragile States post COVID-19: What Stabilization Policies? At Euro-Mediterranean Economists Association

   Summary: A book on “Macroeconomic Policy In Fragile States,” coedited by Ralph Chami, Member of EMEA Advisory Board and others, covered the challenges of developing and implementing macroeconomic policy in Fragile and Conflict Affected States (FCS). This book provides the backbone to grasp the multifaceted fragility and how to mitigate via analytical frameworks and case studies. Against this backdrop, the EMEA Webinar discusses the increased fragility in the Middle East and Africa particularly in the context of COVID-19, while addressing the political economy issues and corruption, and provides avenues for stabilisation policies anchored in fiscal policy, trust, governance and private sector involvement. The webinar will question the role of international partners, coordination and solidarity to tackle fragility.

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

1. COVID-19 Pandemic in Developing Countries

   Summary: In December 2020, the IMF organized a virtual conference on COVID-19 Pandemic in Developing Countries. The motivation departed from the fact that economic outlook has worsened significantly in some emerging market and low-income economies where infections are rising rapidly. Consequently, these economies, excluding China, are projected to incur a greater loss of output over 2020-21 relative to the pre-pandemic projected path when compared to advanced economies. These uneven recoveries significantly worsen the prospects for global convergence in income levels. In this event, senior IMF staff, ministers, central bankers and academics from both emerging market and low-income countries discussed policy priorities to save lives and livelihoods, particularly the options to keep economies stable until there is a widely available vaccine. As a widely accessible, high-level virtual external event with a specific focus on developing countries, the event attracted a large audience across our membership and offered a valuable opportunity for peer-learning.

2. Monetary Policy and Inequality: COVID-19 and Beyond

   Summary: In collaboration with the Peterson Institute for International Economics (PIIE) and the Council on Economic Policies (CEP), the IMF-FCDO coordinated three high-level virtual roundtables on Central Banks and Inequality in December 2020. The event hosted high senior staff from the organizing intuitions, several other key international organizations and academia. The first session elaborated on inequality and financial regulation. The second session featured a discussion about financial market infrastructure and inequality while the third session discussed the role of monetary policy and inequality. There was a consensus that COVID-19 profoundly increased inequality and that support measures from central banks (in addition to fiscal responses and structural reforms) are needed to help the most economic vulnerable.

Output 3.2 – Results of papers reflected in IMF Board discussions and papers

Papers discussed by the IMF Executive Board

1. Update on the Joint IMF-WB Multipronged Approach to Address Debt Vulnerabilities

   Summary: Amid rising debt risks in low-income developing countries and emerging markets, the IMF and the WB have been implementing a multipronged approach (MPA) to address debt vulnerabilities. Amplification of debt risks owing to COVID-19 has upped the urgency to implement the MPA and highlights the importance of debt sustainability and transparency for long-term financing for development. At the same time, it should be noted that countries have limited capacities which are further stretched by COVID-19 and that implementation of the MPA by itself may not be sufficient to address debt vulnerabilities and risks from global economic shocks.

2. Macroeconomic Developments and Prospects In Low-Income Countries—2021

   Summary: This paper is the sixth in a series that examines macroeconomic developments and prospects in low-income countries (LICs). LICs are defined in this report as the countries eligible to PRGT facilities (69 countries). The first section of the paper discusses recent macroeconomic developments and trends across LICs. The second section estimates LICs' financing needs up to 2025 to resume and accelerate their income convergence with advanced economies (AEs). It does this by estimating the additional financing that would enable LICs to step up spending response to COVID, including vaccination needs, while rebuilding or keeping external buffers to enhance resilience, and then the paper considers the financing needed to allow LICs to accelerate convergence with AEs. The paper then discusses a mix of financing options, including concessional financing from the international financial institutions, grants and loans from bilateral donors, private financing and debt operations, but also domestic reforms within LICs themselves as a key component to foster growth, enhance private investment, raise public revenues, and increase efficiency of spending.

Output 3.2.a – Results of papers reflected in IMF policy papers

Fiscal Monitor/WEO/REO/SDN

1. REO Chapter: Adapting to Climate Change in Sub-Saharan Africa

   Summary: Sub-Saharan Africa is especially vulnerable to climate change, as it relies heavily on rain-fed agriculture and has limited resilience and coping mechanisms. On average, climate change could reduce GDP growth by at least 1 percentage point in the month a climate shock occurs. Improving access to finance and insurance, education, health, telecommunications, and physical infrastructure would be most effective in raising resilience. Ensuring food security and raising agricultural productivity in the face of intensifying weather shocks will require targeted social assistance, crop diversification, and improved irrigation. While these measures involve large public spending, they should be prioritized as they will be more cost-effective than frequent disaster relief. Limited fiscal space poses a challenge and means that development partners' support will be critical.

2. WEO Box: Inclusiveness in Emerging Market and Developing Economies and the Impact of COVID-19

   Summary: Gabriela Cugat and Futoshi Narita conducted a research that documents the possible implications of the pandemic for poverty reduction, improvements in life expectancy, and progress toward greater equality in emerging market and developing economies. The number of people in extreme poverty is likely to rise substantially this year, for the first time in more than 20 years, and income inequality, on average, across these economies could rise back to levels seen in 2008, reversing gains since the global financial crisis. Life expectancy is less likely to be affected, although there are downside risks related to the fragile state of health care systems and interruptions in treatments of other lifethreatening illnesses. This research has been published as a box in the October 2020 World Economic Outlook, and featured in the IMF Blog, Quartz Magazine, and the World Economic Forum.

3. WEO Box: Box 2.2. Education Losses during the Pandemic and the Role of Infrastructure

   Summary: School closures and other pandemic-related disruptions pose a serious risk to human capital accumulation across the world. Early evidence shows that education losses were larger in economies with preexisting gaps in infrastructure (such as access to electricity and internet), which constrained their ability to effectively implement remote learning programs. Remedial measures are essential to prevent the scarring effect on human capital stock, which would lead to further economic divergence. This calls for urgent policy action as well as international support for low-income countries and many emerging market economies with limited infrastructure and inadequate educational funding.

4. Board presentation: The COVID-19 Crisis and Low-Income Developing Countries: Impact, Policy Response and Policy Tradeoffs

Summary: On July 22, IMF staff gave a Board presentation on the COVID-19 policy response and policy tradeoffs in the context of low-income developing countries (LIDCs). The research shed light on developments in LIDCs, which account for one-fifth of the world population but for only about 4½ percent of global GDP and do not always receive full consideration in analyses of the global economy. At the same time, LIDCs are being hit hard by the COVID-19 crisis, suffering an unprecedented external shock and having to combat the fallout with very limited resources and policy instruments. The presentation argued that countries with limited policy space should front-load containment measures—to flatten the infection curve as much as possible and use the time to build up health sector capacity—and move to more targeted measures when broad containment can no longer be sustained. It also showed that LIDCs have broadly followed that script. The presentation was appreciated by IMF Executive Directors, and some requested frequent briefs for wider interest. A blog inspired from this presentation has been published here.

5. Board presentation for Africa's Constituency: Departmental Paper - "Macroeconomic Research in Low-Income Countries: Advances Made In Five Key Areas Through A DFID-IMF Collaboration"

   Summary: Despite strong economic growth since 2000, many low-income countries (LICs) still face numerous macroeconomic challenges, even prior to the COVID-19 pandemic. Despite the deceleration in real GDP growth during the 2008 global financial crisis, LICs on average saw 4.5 percent of real GDP growth during 2000 to 2014, making progress in economic convergence toward higher-income countries. However, the commodity price collapse in 2014–15 hit many commodity-exporting LICs and highlighted their vulnerabilities due to the limited extent of economic diversification. Furthermore, LICs are currently facing a crisis like no other—COVID-19, which requires careful policymaking to save lives and livelihoods in LICs, informed by policy debate and thoughtful research tailored to the COVID-19 situation. There are also other challenges beyond COVID-19, such as climate change, high levels of public debt burdens, and persistent structural issues.

6. Board presentation: "Briefing on the Outlook for Latin America and the Caribbean"

   Summary: The periodical briefing on the economic outlook for Latin America and the Caribbean to the IMF Executive Board, held on March 30 by the IMF Western Hemisphere Department in the context of the 2021 Spring Meetings, included the uptake of the analysis conducted under the FCDO-IMF research partnership regarding the estimated impacts of the COVID-19 crisis on income inequality, highlighting a large adverse impact to the region despite the already high levels of inequality.

Output 4.1 – Commissioned Papers

1. Firms, Failures, and Fluctuations: The Macroeconomics of Supply Chain Disruptions
   Daron Acemoglu and Alireza Tahbaz-Salehi

   Summary: This paper studies how firm failures and the resulting disruptions to supply chains can amplify negative shocks. We develop a non-competitive model where customized supplier-customer relations increase productivity, and the relationship-specific surplus generated between firms and their suppliers is divided via bargaining. Changes in productivity alter the distribution of surplus throughout the economy and determine which firms are at the margin of failure. A firm's failure may spread to its suppliers and customers and to firms in other parts of the production network. We provide existence, uniqueness, and a series of comparative statics results, and show how the response of the equilibrium production network may propagate recessionary shocks.

2. Finance, Growth, and Inequality
   Ross Levine
   Forthcoming IMF Working Paper

   Summary: Finance and growth emerged as a distinct field of economics during the last three decades as economists integrated the fields of finance and economic growth and then explored the ramifications of the functioning of financial systems on economic growth, income distribution. This paper reviews theoretical and empirical research on the connections between the operation of the financial system and economic growth and inequality. While subject to ample qualifications, the preponderance of evidence suggests that (1) financial development—both the development of banks and stock markets—spurs economic growth and (2) better functioning financial systems foster growth primarily by improving resource allocation and technological change, not by increasing saving rates. Research also suggests that financial development expands economic opportunities and tightens income distribution, primarily by boosting the incomes of the poor. This work implies that financial development fosters growth by expanding opportunities. Finally, and more tentatively, financial innovation—improvements in the ability of financial systems to ameliorate information and transaction costs—may be necessary for sustaining growth.

3. Is Regional Trade Integration a Growth and Convergence Engine in Africa?
   Vigninou Gammadigbe

   Summary: The main objective of Regional Trade Agreements (RTAs) is to stimulate economic growth in participating countries through increased trade, economies of scale, knowledge and technology transfer. Using a panel data over the period 1979 to 2018, this paper examines the contribution of regional trade integration (RTI) to economic growth and income convergence in Africa and its major Regional Economic Communities (RECs). The results of the instrumental variable and panel fixed-effects estimation show that RTI promotes economic growth in Africa. However, it fosters income divergence, reflecting the distribution of the gains from regional integration in favor of the more developed economies of the continent. The results of this study show the importance to support the African Continental Free Trade Area (AfCFTA) project with policies aimed at reducing non-tariff

Output 4.1.1 – Toolkits

1. Structural Reform Database and its web toolkit (Internal release)

   Summary: The IMF Data website includes interactive charts and tables, as well as "Dividends Toolkit" (based on Fall 2019 WEO Chapter 3) that allows us to compute potential growth gains from structural reforms to close the gap relative a benchmark level. For example, in the case of Ethiopia, the toolkit shows that closing the gap to the regional frontier could generate additional 2 percentage points of annual real GDP growth (see the right chart below). The SRD provides a complete set of indicators on structural policies over 40 years (1973-2014) for 90 countries with various development levels (see below). The SRD is developed by the RES staff in collaboration with external researchers (Alesina, Furceri, Ostry, Papageorgiou, and Quinn, 2020) under a research partnership with the former U.K. Department for International Development (DFID), which merged with the Foreign and Commonwealth Office on September 2, 2020 to become the Foreign, Commonwealth and Development Office (FCDO). The database builds on many previous efforts with broad coverage is in the spirit of Ostry, Prati, and Spilimbergo (2009).

2. DIGNAR-19: A Toolkit for Macro Policy Assessments of the COVID-19 Pandemics in EMDEs

   Summary: Motivated by the challenges posed by the COVID-19 pandemic, the team developed the DIGNAR-19 toolkit to help area departments conduct quantitative macroeconomic assessments and policy scenario analysis in EMDEs, with a focus on growth and debt.

Output 4.2 – Attendance of External Researchers at High-Level Policy Conferences

1. "Monetary Policy Frameworks: An Index and New Evidence" on July 9, 2020 at NBER Summer Institute 2020.

2. "(In)efficient Credit Booms: the Role of Collateral" on June 16, 2020 at Barcelona GSE workshop on Asset Prices, Finance and Macroeconomics.

3. "(In)efficient Credit Booms: the Role of Collateral" on September 1, 2020 at VMACS junior conference.

4. "High Level Virtual Conference on Fragile States Facing COVID-19" on May 27, 2020 at the London School of Economics

5. "Monetary Policy Frameworks: An Index and New Evidence" at a virtual conference hosted by the African Union, ATI, and the IMF.

6. "The impact of COVID-19 on Migrants and Remittances in Low-Income and Fragile States" at a virtual conference hosted by the African Union, ATI, and the IMF.

7. "In Search of Information: Use of Google Trends' Data to Narrow Information Gaps for Low-income Developing Countries" on October 29, 2020 at the World Bank.

8. "Outcomes in Disaster-Prone Countries" on November 2020, at the IMF Annual Research Conference.

9. "Network Bottlenecks and Market Power" at LMU Munich International Economics Seminar on November 2020.

10. "Supply chain bottlenecks during a pandemic" on January 2021, at ASSA.

11. "Exports upgrading and consumption volatility" on January 18, 2021 at Global Economic Policy Group Conference.

12. "Food (in)Security in SSA under COVID-19 A Macro Perspective" in December 2020 at the IMF's COVID-19 Knowledge Burst seminars.

13. "Macroeconomic Outcomes in Disaster-Prone Countries" on January 27, 2021, at the IMF's Western Hemisphere Department's seminar series.

14. "Green Multiplies" on March 11, 2021 at Joint IMF-WB Seminar Series on Climate Macroeconomics.

15. Discussion on "Re-igniting South African economic growth: Lessons from the past three centuries" on September 9, 2020 at IMF's peer-to-peer seminar series.

Output 4.3 – Results disseminated in e-newsletters

1. June 2020 Newsletter
2. September 2020 Newsletter
3. December 2020 Newsletter
4. March 2021 Newsletter

Extras

Blogs/Article

1. IMF Blog: “COVID-19: Without Help, Low-Income Developing Countries Risk a Lost Decade”.
2. IMF Blog: “How COVID-19 Will Increase Inequality in Emerging Markets and Developing Economies”.

In the press and other

4. Quartz: “The pandemic has inequality rising in poor countries”.
5. CNN: “As Covid-19 rages on, countries need to support migrant workers”.
6. World Economic Forum: “How COVID-19 will increase inequality in emerging markets and developing economies