Annual Review - Summary Sheet

This Summary Sheet captures the headlines on programme performance, agreed actions and learning over the course of the review period. It should be attached to all subsequent reviews to build a complete picture of actions and learning throughout the life of the programme.

Title: Macroeconomic Research in Low Income Countries		
Programme Value: £9,610,000		**Review Date: June 2016**
Programme Code: 202960	**Start Date: March 2012**	**End Date: March 2017**

Summary of Programme Performance

Year	2013	2014	2015	2016				
Programme Score	**A++**	**A++**	**A++**	**A++**				
Risk Rating	**Low**	**Low**	**Low**	**Low**				

Summary of progress and lessons learnt since last review

1. Once again the Macroeconomic Research in LICs project has exceeded the “High” milestones for virtually every indicator. This logframe measurement fails to capture the full details of excellent performance, for example the range of LICs, including in DFID focus countries, to which research has been applied. So the project deserves its continued assessment at A++.

2. The project continues to play a strategic role in the IMF. The IMF remains extremely important in LICs, which are under-researched and have special characteristics. This project is part of an effort to keep good people, intellectual energy and innovation going around LIC issues, and seems to be working well in this regard.

3. The project has produced an excellent annual report which is fully annexed to this Annual Review and therefore not cut-and-pasted back into the review template itself. The annual report illustrates a variety of examples where the outputs of the research programme have started to gain traction in a policy context. Two exciting advances are the development of Excel based versions of two of the programme’s most successful models, the DIG, developed by Buffie et al (2012) and the DIGNAR, developed by Melina et al (2014). The DIG model allows analysis of the macroeconomic consequences of scaling up public investment, with extensions exploring the implications of investing in energy as well as infrastructure, and the DIGNAR, exploring the implicatiosn of investment surges in natural resource rich countries. Staff at the Fund have applied both models to around 22 countries, with more on-going. The development of Excel-based toolkits of these models allows staff in developing country administrations to complete analysis without detailed programming knowledge, making the models accessible policy tools. Users of the toolkits can directly input country-specific calibration into Excel, which returns customised results and plots in a user-friendly spreadsheet format.

4. The 2015 review team noted that a number of peer reviewed papers were published in a single issue of Pacific Economic Review, a jounal with a small readership and profile, and noted the need to see articles in some more prestigious volumes. It went on to note that internal publication in the IMF is in fact far more important since the IMF has such influence over policy making in LICs. This year the IMF have made substantial improvements in this area, increasing the number of published peer-reviewed rticles and publishing in more prestigious journals, such as the Journals of Development Economics. This is an important aspect of the programme outputs as it increases the level of academic engagement in vital macroeconomic issues in LICs.

5. Through 2015 the IMF team have continued to produce good quality research, both in Working Papers and, importantly, in a more diverse range of peer-reviewed journals, as well as a book chapter in *The Oxford Handbook of Africa and Economics*.

6. In earlier years of the programme the IMF have produced a significant amount of research and the past year has seen increases in the amount of dissemination activities going on.The chief of the Research Department's Development Macroeconomics division – and lead of the IMF/DFID programme - has moved to a senior position in the IMF's Institute for Capacity Development (ICD) and we are optimistic that this move will help the activities of the research programme to gain further prominence in the training and technical assistance activities of the IMF in the years ahead.

Summary of recommendations for the next year

7. The programme is scheduled to end by March 2017 and is now in its final year. Due to the continued high level of performance, discussions about a third phase began at the end of the 2nd quarter 2016. These discussions are in very early stages, but it is agreed that the next phase will aim to consolidate existing research findings, increasing policy uptake, as well as considering emerging research areas.

8. The review team should continue to work towards the production of summary evidence products or synthesis papers. These would be especially valuable for the 'macroeconomic management of natural resources', 'macro policies and income distribution', 'financial deepening for macroeconomic stability and sustained growth', 'Growth through diversification' and 'gender and macroeconomics' themes.

9. The IMF team should continue to aim for publications in more presitigious and widely read academic journals. Publication in top-quality peer reviewed journals has been a core objective of this programme across the two phases. Whilst IMF publications are widely read and highly regarded, publication in top quality peer-reviewed journals helps to influence ideas and academic debate/inquiry into macroeconomic issues affecting LICs. Over the long term this should encourage a wider set of researchers to engage in macroeconomic research in LICs, whilst in the short term it is successfully encouraging collaboration between the IMF and external academics.

10. The IMF team should explore opportunities to share its experience with other DFID research programmes, perhaps using training programmes to stimulate interest in their research findings. This could help increase the number of researchers considering macroeconomic issues in LICs and allow some of the IMF's findings to be corroborated by researchers outside the Fund.

A. Introduction and Context (1 page)

DevTracker Link to Business Case:	http://devtracker.dfid.gov.uk/projects/GB-1-202960/documents/
DevTracker Link to Log frame:	http://devtracker.dfid.gov.uk/projects/GB-1-202960/documents/

Outline of the programme

11. There are a number of reasons why DFID began this intervention in macroeconomic research. Firstly, the capacity to do macroeconomic research and use the evidence is very small. Secondly, recent global macroeconomic crises created new challenges for LICs, including much greater access to international financial markets, and increases in non-concessional Government borrowing in many countries. Most recently the collapse in many commodity prices, ending the "supercycle", has generated acute macroeconimc pressures in many developing economies. These will be difficult to manage. The financial crisis of 2008 and the subsequent Eurozone crisis continues to divert scarce resources to solving macroeconomic problems that are primarily of the

developed and emerging world. A key rationale for DFID investment in macroeconomic research is to protect and promote the LIC agenda – and this objective remains highly relevant.

12. "Macroeconomic Research in Low Income Countries" represents a strategic partnership in research between DFID 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 research 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.

13. The project began in March 2012 and was extended for a further two years, to March 2017, by a MoU amendment in December 2014. We are now in the final year of the programme. In total, DFID will provide £9.61 million over five years.

14. The Impact is: '*a deeper understanding of, and better engagement by, IMF policy makers on LIC-specific macroeconomic issues based on robust analysis and evidence, and the development of toolkits to enable LICs to benefit from development in six key thematic areas*.'

15. The Outcome of the project is '*better macroeconomic policy-making in LICs leads to faster economic growth, job creation and poverty reduction in LICs'*.

16. The principal objectives of the project are:

i) Produce high quality research.
ii) Strongly encourage the uptake of research by IMF country teams.
iii) Encourage the uptake of research by country authorities.
iv) Strengthen engagement by IMF senior policymakers on issues affecting LICs.
v) Expand the network of researchers working on macroeconomic issues affecting LICs.

B: PERFORMANCE AND CONCLUSIONS (1-2 pages)

Annual outcome assessment

17. The Outcome of the project is '*better macroeconomic policy-making in LICs leads to faster economic growth, job creation and poverty reduction in LICs*'. The indicator for this is is "Improved IMF policymaking and integration of LIC-specifics in project thematic areas", with a high target of 7 thematic areas and a medium target of 5 by March 2016. Through inclusion of a number of research outputs in Article IV programmes and additional technical assistance missions the programme has reached the medium target.

18. Whilst falling short of the high target, which is a measure of the bredth of uptake across thematic areas, the IMF has managed to attain significant depth of uptake in a number of areas, particularly; i) Monetary policy ii) Public investment, growth and debt sustainability iii) Macroeconomic management of natural resources and iv) Current account norm. Given the current macroeconomic context in many LICs following the end of the commodity super-cycle, targeting depth of impact in these areas is very welcome. Examples of outcome achievement can be found in Appendix 3 of the IMF Annual Report, which is attached in full as an Annex to this Annual Review.

19. It is important to note that in comparison to other research programmes, this partnership with the IMF facilities very quick results at the outcome level of policy influence. Through their unique position the IMF have very direct access to policy makers and are able to influence policy makers within a few years, something that would be exceptional in other research programmes. Of

course, this programme could limit its focus to this avenue, but by maintaining an emphasis on peer-reviewed publications and partnerships with external academic researchers, this programme increases the number of academic participants involved in the dialogue about macroeconomics in LICs and, in doing so, boosts confidence in the advice generated.

Overall output score and description

20. The project has exceeded 75% of its output level “high” targets and met a further 17% of the “high” targets. Only one indicator failed to achieve the “high” target, but was closer to it than to the “medium” target. As a result the project has scored A++ for almost every output. Outputs are about the production of research working papers and published articles, the engagement of IMF staff teams and country authorities, and capacity building.

21. Continued high levels of interest in the research outputs of this programme suggest the research topics continue to be highly relevant to the work of IMF staff teams and country authorities.

Key lessons

22. In this review the Macroeconomics in Low Income Countries project has scored A++ for the fourth consecutive year. Lessons should be about success. Unfortunately the conditions which produce the success of this project may be partly unique: first, at the beginning of the project the IMF was ideally placed to put together a really good research team on macroeconomic issues in LICs; but second, and perhaps most importantly, the project enjoys the special advantage that the IMF itself is preeminent in macroeconomic advice for developing countries and so therefore the link into policymaking is very direct. Nonetheless, in future phases should reflect carefully on the consistent performance of the project when calibrating milestone targets. Whilst the IMF has continually exceeded the “high” targets, it has not been by amounts so substantial as to clearly invalidate the logframe and in our view it would be unreasonable to shift the goal posts each year during the current phase.

23. The team’s continued success in getting direct applications of research in particular countries is very impressive, and we should look to emulate this in other programmes. DFIDs Growth Research Team should continue to improve coordination between research programmes in order to maximise opportunities for policy impact from the overall portfolio.

24. The IMF team reflected that a new challenge in the past year had been to strike a good balance between outreach activities, building on the streengths of the programme and keeping the research agenda at the frontier, with new ideas. However, they believe the broadening of IMF stakeholders, for example through the staff movements described above, should help in this regard.

Has the logframe been updated since the last review?

25. No. The logframe was updated as part of project extension in December 2014.

C: DETAILED OUTPUT SCORING (1 page per output)

Output Title	*Produce high quality, policy relevant research on macroeconomic issues affecting LICs*		
Output number per LF	**1**	**Output Score**	***A++***
Risk:	*Low*	Impact weighting (%):	30
Risk revised since last AR?	*N*	Impact weighting % revised since last AR?	*N*

Indicator(s)	**Milestones**	**Progress**
1.1 Number of priority research working papers produced	By March 2016, accumulative. H (52 papers) M (45 papers) L (40 papers)	16 produced in 2015, 56 produced in total.
1.2 Number of research papers accepted for publication in top journals	By March 2016, accumulative H (9) M (4) L (3)	8 published in 2015, 24 published in total.
1.3 Number of freely available books published.	N/A	N/A

Key Points

26. This year, the researchers completed sixteen working papers, bringing the total to fifty six over the four years. The papers cover six broad topics of this research project: Monetary and Exchange Rate Policy in LICs; Public investment, Growth, and Debt Sustainability; Macroeconomic Management of Natural Resources; Capital Flows; Financial Deepening and Macroeconomic Stability and Sustained Growth and Gender and Macroeconomics.

27. During the last year the team published eight papers externally, bringing the total to twenty four over the four years of the programme:

    In the May 2016 issue of the *Journal of Development Economics:*

    i) Current account norms in natural resource rich and capital scarce economies
    Juliana D. Araujo , Bin Grace Li , Marcos Poplawski-Ribeiro , Luis-Felipe Zanna

    ii) Too much and too fast? Public investment scaling-up and absorptive capacity
    Andrea Presbitero

    In the September 2015 issue of the *Journal of International Economics*

    iii) Public debt and growth: Heterogeneity and non-linearity
    Markus Eberhardt and Andrea Presbitero

    In the January, 2016 issue of *Economic Modelling*.

    iv) Debt Sustainability, Public Investment, and Natural Resources in Developing Countries: The DIGNAR Model
    Giovanni Melina, Susan Yang, and Felipe Zanna

    A chapter was published in *The Oxford Handbook of Africa and Economics: Volume 2: Policies and Practices.*

    v) Monetary Policy Issues in Sub-Saharan Africa
    Andrew Berg, Stephen O'Connell, Catherine Pattillo, Rafael Portillo, and Filiz Unsal

    In a special issue of the *Oxford Review of Economic Policy*.

vi) Aid and domestic resource mobilization with a focus on Sub-Saharan Africa
Oliver Morrissey
vii) On measuring loan concessionality in Official Development Assistance
Daniel Roodman
viii) Aid and growth at the regional level
Axel Dreher and Steffen Lohmann

28. The total quantity of peer-reviewed publications (Indicator 1.2) substantially exceeds the high target. These articles have been published in range of quality Journals. In previous reveiws the IMF team have highlighted that it is a great challenge to get papers on macroeconomics in LICs into top economic journals and consequently they were targetting publications such as the Journal of Develoment Economics. Their success in getting published in this very good journal demonstrates the underlying quality of the project's outputs and enhances the profile and readership in broader academic and policy circles.

29. Whilst it would be hard to do better than the internal IMF publication process in terms of overall profile, publication in a genuinely top journal should draw greater attention to individual pieces and promote the need for further macro research focused on LICs. Given the success at broadening the number of journals the programmes outputs are being published in, coupled with upgrading the quality of those journals, this output scores A++, higher than the A+ achieved last year.

Summary of responses to issues raised in previous annual reviews (where relevant)

30. Broadly, the response to issues raised in the last annual review have been very positive, especially with regard to the improvement of publications in peer-reviewed journals. The 2015 AR encouraged the IMF to produce policy briefs, but there is no evidence of these on the programme website. However, they do not appear in the programme logframe and are not vital to successful delivery of the objectives it sets out. We may wish to consider more strongly incentivising their production in the future.

31. The 2015 AR proposed that we consider a review of the logframe targets to examine whether they are too easy for the Fund to exceed. The DFID team felt that due to the A+ Output score in 2015 it was not clear that this was the case. Output targets had been set in December 2014 when the programme was extended for 2 years after the initial 3 years of operation. That period of experience should have allowed correct calibration of performance expectations and the DFID team concluded that as there were only two review periods remaining in Phase 2 (this annual review and a project completion report), it was unreasonable to move the goalposts due to strong performance. A third phase, which was likely and is now being planned, is the appropriate moment to increase performance expectations.

Recommendations

32. Once again the review team notes that there has been impressive performance of the programme during the last year of operation.

i) We continue to encourage the production of policy briefs to broaden the readership and reach of the outputs and should discuss adding this to the logframe in the future.
ii) We encourage the IMF team to continually advance their publication ambitions towards more presitigious and widely read academic journals.

Output Title	*IMF Research Products produced under this project used by IMF country teams and partner authorities.*		
Output number per LF	**2**	**Output Score**	***A++***
Risk:	*Low*	Impact weighting (%):	30
Risk revised since last AR?	*N*	Impact weighting % revised since last AR?	*N*

Indicator(s)	Milestones	Progress
2.1 Application and use of tools and frameworks by country teams.	By March 2016, evidence of number of country teams applying policy tools and frameworks: H (26) M (14) L (8)	14 applications in 2015/16, cumulatively 48
2.2 Application and use of tools and frameworks by country authorities.	By March 2016, evidence of number of country authorities applying policy tools and frameworks: H (8) M (5) L (4)	2 in 2015/16, in addition to 7 previously, total 9

Key Points

33. The researchers have completed 14 applications of their work this year, covering five topics: 1) Monetary Policy; 2) Public investment, growth, and debt sustainability; 3) Macroeconomic management of natural resources; 4) Current account norm; and 5) Inequality. Many of these applications took place through IMF staff in Article IV missions.

34. Research on *monetary policy* was applied to 4 countries, Tanzania, Kenya, Ghana and Uganda, all of which are DFID focus countries. In the majority of cases these applications involved missions to Central Banks, with the objectives of improving central bank analysts' modelling capabilities regarding inflation outlooks, enhancing the formulation process of monetary policy, and improvement of the management and recording of central bank liquidity processes. In Uganda the IMF team are conducting a joint research project with staff from the Central Bank. The joint project explores the link between monetary policy and bank lending during the period 2010-2014, using a large micro-level dataset from the Ugandan credit register. This offers a unique opportunity to undertake the first analysis of the bank lending channel in a sub-Saharan economy based entirely on micro data.

35. Research on *public investment, growth and debt sustainability* was applied to the Maldives, Lesotho and Tanzania. An excel based toolkit of the DIG model was used to teach an Institute for Capacity Development course for IMF staff in January 2016, and a training course in Tanzania for country officials in the region in March 2016. The toolkit allows simulations of policy scenarios and analysis of the macroeconomic consequences of scaling up public investment to be completed with relative ease, through a series of simple input fields that generate an output sheet. The Excel toolkit will be made openly available online.

36. An Excel based toolkit for the DIGNAR model has also been produced by IMF researchers to help LIC authorities achieve better *macroeconomic management of natural resources*. The DIGNAR model assesses the macroeconomic implications of investment surges, including on debt sustainability, in natural resource-rich developing countries, using a model that makes explicit the role of pervasive features in these countries including public investment inefficiency,

absorptive capacity constraints, Dutch Disease, and financing needs to sustain capital. The Excel based toolkit for the DIGNAR model has similar features to the DIG model and is makes the model highly accessible to policy makers in LICs. During 2015/16 the model was also applied to Botswana, yielding similar insights to other applications: notably the importance of complementing the scaling-up process with reforms that improve the quality and the efficiency of public investment, thus strengthening its economic impact.

37. The final application of IMF work examined the effects of fiscal policy on inequality in Uganda during the 2015 Article IV mission. The IMF team analyzed the quantitative impact of tax policy and administration improvements on inequality and found that increasing the VAT rate would have a limited, adverse impact on equality while effectively raising revenues. The IMF team held a workshop with staff of the Uganda Revenue Authority to highlight the importance of taking into account the high level of informality in the Ugandan economy and changing incentives of economic agents.

38. The IMF had two successful country authority engagements in 2015/16, in Ethiopia and Malawi. In **Ethiopia** the IMF has been working to strengthen its surveillance engagement on inequality issues. The team presented analytical work on "Economic Reforms and Broad Based Growth in Ethiopia" at the National Bank of Ethiopia (NBE) and discussed the macroeconomic and distributional implications of a set of reforms aimed at improving revenue mobilization, efficiency, and broad based growth using a model tailored to the country. To sustain inclusive growth, the team proposed three inclusive growth policies: (i) cash transfers (expansion of the PSNP), (ii) rural-urban migration, and (iii) financial sector deepening. The team's work has been incorporated into the World Bank's Systematic Country Diagnostic for Ethiopia.
In **Malawi** the government is is considering reforming its "Farm Input Subsidy Program (FISP)" with the objective of generating fiscal space and improving the efficiency of expenditure. IMF staff presented analytical work on "Macroeconomic and Distributional Implications of FISP Reform in Malawi." to the authorities at the Ministry of Finance, and to the donor community. The results suggest that the trade-off in the payoffs between efficiency and equity with the proposed reform can be ameliorated by compensatory measures. The Minister of Finance requested further engagement in the near future, possibly in the form of a technical assistance mission. .

39. During the fourth year (FY2015/16) the IMF team held six workshops. These covered: i) Macroeconomic modelling and monetary policy analysis, ii) Macroeconomic policy and income inequality, iii) Gender responsive budgeting, iv) Macro-fiscal issues in natural resource management, v) modelling public debt with growth of public investment and vi) an ICD course on macroeconomic management in resource rich countries was delivered to mid to senior level officials from central banks. These issues are highly relevant to the current macroeconomic pressures on many LICs, as well as to the SDG agenda. Courses and workshops such as these offer a unique opportunity for the team to engage with country authorities and IMF country teams, but are not a separate output in the logframe.

Recommendations

40. Country applications tend to be quite demand driven, but that demand from country teams and country authorities can be stimulated by training courses, as described in the case of Malawi. It is usually feasible to apply a modelling framework to an individual country unless there are very severe data constraints. The Fund team make it clear that the ability to respond to training needs and conduct country applications is only possible because of DFID funding.

41. Given the important contribution of training courses to disseminiation and uptake of the research outputs, we should consider making this an explicit logframe output. The movement of the previous programme lead, Andy Berg, to the position of deputy director of the ICD presents an opportunity to extend efforts at running training and workshops. An explicit logframe output could provide the appropriate incentive structure for this.

42. We should explore getting the IMF team to share some of their experiences of provide training courses with other Growth Research Team programmes, for example the IGC and UNU-WIDER, in order to properly leverage DFID's research network outreach.

43. We should advertise the activities of the Fund to DFID country teams, especially in DFID focus countries, such as Ghana and Malawi, that are being to grapple with issues for whoich this research agenda is highly relevant.

Output Title	*IMF strengthens engagement by senior IMF policy makers on macroeconomic issues affecting LICs*		
Output number per LF	**3**	**Output Score**	***A++***
Risk:	*Low*	Impact weighting (%):	30
Risk revised since last AR?	*N*	Impact weighting % revised since last AR?	*N*

Indicator(s)	**Milestones**	**Progress**
3.1 High level policy conferences attended by senior IMF staff reflect findings of research papers funded under this project.	By March 2016, policy conferences drawing on outputs from the project: H (8) M (6) L (4)	12 in previous years, 1 in 2015/16, 13 total
3.2 Results of the research papers produced reflected in IMF Board discussions, IMF policy papers such as Staff Discussion Notes, policy memos to management, and the like.	By March 2016, evidence of research in number of IMF Board/SDN/etc. papers: H (8) M (4) L (3)	11 in previous years, 2 in 2015/16, 13 in total.
3.2.1Results of the research papers produced reflected in IMF Board papers.	By March 2016, evidence of research in to number of IMF Board Papers H (6) M (4) L (3)	8 in previous years, 1 in 2015/16, 9 in total.

Key Points

44. The IMF-DFID team participated in a high-level policy conference on Financing for Development, which focused on the post-2015 development agenda (Output 3.1). The conference brought together academics and policy makers to discuss innovative strategies aimed at catalyzing domestic and external financing from the official and private sectors.

45. The programme's research was reflected in one IMF Board paper and one IMF Staff Discussion Note (Outputs 3.2 and 3.2.1):
- IMF Board Paper: The programme's extensive research on monetary policy issues in LICs made a substantial contribution to a new IMF policy paper "Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries". This paper examines how LICs can adopt forward-looking frameworks that better anchor inflation and promote stability and growth. It highlights the IMF-DFID team's technical assistance with central banks in sub-Saharan Africa, for example in Kenya, Uganda, Rwanda and Ghana.
- The IMF Staff Discussion Note "From Ambition to Execution: Policies in Support of Sustainable Development Goals" examines three areas of key relevance for achieving the sustainable development goals; economic transformation for sustainable growth, making growth more inclusive and environmental sustainability for macroeconomic stability and growth. The note emphasises synergies between economic, social and environmental objectives, assesses trade-offs between them and policies that may be used to minimise them.

Output Title	*IMF strengthens capacity building by expanding the network of LIC researchers who are new to the field of macroeconomic research on LICs.*		
Output number per LF	**4**	**Output Score**	***A+***
Risk:	*Low*	Impact weighting (%):	10
Risk revised since last AR?	*N*	Impact weighting % revised since last AR?	*N*

Indicator(s)	**Milestones**	**Progress**
4.1 Number of commissioned research papers produced on thematic areas.	By March 2016, number of commissioned papers: H (16) M (10) L (6)	13 in previous years, none added in this review year
4.1.1 Toolkits offering publically available datasets to encourage further uptake of work and expand network of researchers	By March 2016, toolkits produced: H (2) M (1) L (0)	1 produced in 2014, 1 produced in 2015/16. 2 in total.

4.2 Attendance of number of external researchers at high-level policy conferences.	By March 2016, number of conferences: H (8) M (6) L (4)	16 in previous years, 15 in 2015/16, 31 in total.
4.3 Outputs and project disseminated in e-newsletter and updated public webpage (number of updates of e-newsletter and/or webpage)	By March 2016, number of updates: H (14) M (8) L (6)	10 in previous years, 4 in 2015/16, 14 in total.

Key Points

46. Seven researchers attended and presented at 15 high level policy conferences, including a presentation of the team's work on gender budgeting at the Europe Gender Summit in Berlin (November, 2015).

47. Four newsletters were issued, highlighting working papers, conferences, and other activities completed over the preceding three months. They are available here:
May 2015 Newsletter
August 2015 Newsletter
November 2015 Newsletter
February 2016 Newsletter

48. This amounts to a strong performance – 50% of the"high" targets have been met, performance against another is mid way between the "medium" and "high" target, whilst attendance at high-level policy conferences (Indicator 4.2) has massively exceeded the "high" target. As noted in last years AR, we feel that the capacity building impacts of the training and country application activites mentioned in the previous output, may in practice amount to deeper capacity building impact than these conferences and communications. But this is extremely difficult to measure and so is not captured.

D: VALUE FOR MONEY & FINANCIAL PERFORMANCE (1 page)

Key cost drivers and performance

49. We do not foresee any changes in costs structures due to exchange rates. So far the Fund has been extremely precise in its cost estimates – incorporating salary increases etc without any suggestion that more resources might be requried to complete either phase. Direct programme management costs and the Trust Fund management fee amount to less than 9% of the total budget. The Direct programme management costs alone represent less than 2% of the total budget, suggesting high management performance that allows a very high proportion of funds to be available for research.

VfM performance compared to the original VfM proposition in the business case

50. The table below shows the cost per paper over the first four years of the project. The team 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. The total staff, contractual, and visiting scholar cost (see Table 1) is thus split between papers and applications. The cost per working paper after 4 years is approximately $104,213 (£71,404), a slight increase on the unit cost after 3 years, reported in the last AR ($91,000 (£57,000)). The cost per published paper after 4 years is $243,163 (£166,609), also a slight increase on the unit cost after 3 years as reported in the last AR ($227,000 (£142,000)). Both of these costs continue to compare favourably with the DFID benchmark of £150,000 per paper.

51. The Business Case (BC) predicted a unit cost per published paper of £121,000 for the IMF programme and £180,000 for the next best option. Despite the slightly higher average cost per published paper after four years than at the end of the third, it is remains well below the next best cost estimated by the BC. The BC also stressed that the IMF would achieve value for money through procurement, by following all IMF guidelines and, where possible, competitive tendering. These procedures have been followed.

52. There is a lag involved in getting working papers accepted for publication in peer-reviewed journals and more working papers have been and will be submitted to journals. As these get published and the programme budget is fully drawn down, the cost per published paper is expected to decrease. However, not all working papers will get pubished and achieving, or improving on the unit cost predicted in the BC depends on the programme meeting or exceeding the target for peer reviewed publications.

Table 1: Cost per Working and Published Paper

IMF Staff	$	1,604,870	£	1,099,617
Contractuals	$	3,796,459	£	2,601,239
Visiting Scholars (VS)	$	2,379,884	£	1,630,637
Total Staff/Contractual/VS Costs	$	7,781,213	£	5,331,493
Split between:				
Research Paper Costs (75%)	$	5,835,910	£	3,998,619
Country Applications Costs (25%)	$	1,945,303	£	1,332,873
Working Papers Produced		56		
Cost Per Working Paper	$	104,213	£	71,404
Published Papers Produced		24		
Cost per Published Paper	$	243,163	£	166,609

N.B. Exchange Rate obtained 19/05/2016 as $1: £0.685175 from www.xe.com

Assessment of whether the programme continues to represent value for money

53. This programme is still regarded to represent very good value for money, as it is achieving outstanding results (exceeding 'high' targets), especially with regard to uptake by IMF teams and LIC authorities.

54. This project is highly cost effective for several reasons:

- The project strictly follows all IMF guidelines for hiring, travel, and conferences. All contractual hires undergo a competitive process.
- Outputs are produced under firm timeframes and must meet Fund requirements for publication.
- The quality of the papers is further evaluated when the papers are submitted to peer-reviewed publications. To date, there are 24 peer-reviewed publications.
- Perhaps most importantly, the IMF research team has a unique ability to quickly communicate research findings to influential IMF country resident representatives and country missions to achieve policy impact. This is extremely valuable.

55. The table below compares the number of working/published papers produced under the DFID project to the overall number of LIC-focused IMF working/published papers from 2012-2015. In each year, the share of DFID papers published is higher than the share of the IMF papers published, which speaks to the quality of the team's work. The absolute number of LIC-focused papers produced elsewhere in the IMF remained steady and low over the 4 years, averaging 2.25 a year. The papers produced under the DFID project are additional and much more numerous, averaging 11.5 per year.

Table **2:** DFID and IMF Working and Published Papers

	DFID-sponsored Working Papers			Other IMF LIC Working Papers		
		Of which published			Of which published	
Year	Number	Number	Share	Number	Number	Share
2012	6	2	33%	32	3	9%
2013	16	3	19%	29	4	14%
2014	8	2	25%	31	0	0%
2015	16	3	19%	33	2	6%
Total	46	10	22%	125	9	7%

Quality of financial management

Of the approximately $8.5m agreed for Phase 2 in December 2014, only $130,255 remained uncommitted by 30 April 2016.

Direct project management costs represented less than two percent of the total budget; if the Trust Fund management fee is included, program management costs were still below nine percent. This means that the vast majority of the funds available to this project were spent on producing high quality research rather than on project management.

Date of last narrative financial report	6 May 2016
Date of last audited annual statement	30 April 2016

E: RISK (½ page)

Overall risk rating: Low

The overall risk rating for this project has always been low. Clearly as the project gets further through its work programme and continues to score very highly on performance, the risk of overall failure diminishes even further.

F: COMMERCIAL CONSIDERATIONS (½ page)

Delivery against planned timeframe

Once again, the IMF team has exceeded almost all of its high output milestones.

As noted above at paragraph 50 above, there is always a time lag with the publication of research papers, so the milestones met during the project's life will understate the eventual total outputs of the work done. As explained in paragraph 50, we also expect the cost per published paper to continue to fall after the programme closes as papers continue to be published.

G: CONDITIONALITY (½ page)

Update on partnership principles (if relevant)

Macroeconomics in Low Income Countries is a global research programme predominantly focused on DFID priority countries. No funding is passed to country governments or similar bodies and as such partnership principles are not applicable. All funds are held and managed by the IMF and are subject to strict financial controls under IMF policies.

H: MONITORING & EVALUATION (½ page)

Evidence and evaluation

Not applicable

This Annual Review

This AR was conducted by the SRO Mark Dray (GRT Economic Adviser) and Peter Feinson (GRT), with independent inputs from Andy Hindsley (in DFID International Financial Institutions Department, IFID), and quality assurance from Tim Hatton (GRT Senior Programme Manager).

The IMF division chief of the Research Department's Development macroeconomics division – and IMF project lead - visited the DFID in preparation for this meeting and Mark Dray and Stevan Lee held a VC with the IMF team ahead of the Annual Report.

Smart Guide

The Annual Review is part of a continuous process of review and improvement throughout the programme cycle. At each formal review, the performance and ongoing relevance of the programme are assessed with decisions taken by the spending team as to whether the programme should continue, be reset or stopped.

The Annual Review includes specific, time-bound recommendations for action, consistent with the key findings. These actions – which in the case of poor performance will include improvement measures – are elaborated in further detail in delivery plans. Teams should refer to the Smart Rules quality standards for annual reviews.

The Annual Review assesses and rates outputs using the following rating scale. ARIES and the separate programme scoring calculation sheet will calculate the overall output score taking account of the weightings and individual outputs scores

Description	Scale
Outputs substantially exceeded expectation	A++
Outputs moderately exceeded expectation	A+
Outputs met expectation	A
Outputs moderately did not meet expectation	B
Outputs substantially did not meet expectation	C

Teams should refer to the considerations below as a guide to completing the annual review template.

Summary Sheet

Complete the summary sheet with highlights of progress, lessons learnt and action on previous recommendations

Introduction and Context

Briefly outline the programme, expected results and contribution to the overall Operational Plan and DFID's international development objectives (including corporate results targets). Where the context supporting the intervention has changed from that outlined in the original programme documents explain what this will mean for UK support

B: Performance and conclusions

Annual Outcome Assessment
Brief assessment of whether we expect to achieve the outcome by the end of the programme

Overall Output Score and Description
Progress against the milestones and results achieved that were expected as at the time of this review.

Key lessons
Any key lessons you and your partners have learned from this programme
Have assumptions changed since design? Would you do differently if re-designing this programme?
How will you and your partners share the lessons learned more widely in your team, across DFID and externally

Key actions
Any further information on actions (not covered in Summary Sheet) including timelines for completion and team member responsible

Has the logframe been updated since the last review? What/if any are the key changes and what does this mean for the programme?

C: Detailed Output Scoring

Output

Set out the Output, Output Score

Score

Enter a rating using the rating scale A++ to C.

Impact Weighting (%)

Enter the %age number which cannot be less than 10%.

The figure here should match the Impact Weight currently shown on the logframe (and which will need to be entered on ARIES as part of loading the Annual Review for approval).

Revised since last Annual Review (Y/N).

Risk Rating

Risk Rating: Low/Medium/High

Enter Low, Medium or High

The Risk Rating here should match the Risk currently shown on the logframe (and which will need to be entered on ARIES as part of loading the Annual Review for approval).

Where the Risk for this Output been revised since the last review (or since inception, if this is the first review) or if the review identifies that it needs revision explain why, referring to section B Risk Assessmen

Key points

Summary of response to iprogrammessues raised in previous annual reviews (where relevant)

Recommendations

Repeat above for each Output.

D Value for Money and Financial Performance

Key cost drivers and performance

Consider the specific costs and cost drivers identified in the Business Case

Have there been changes from those identified in previous reviews or at programme approval. If so, why?

VfM performance compared to the original VfM proposition in the business case? Performance against vfm measures and any trigger points that were identified to track through the programme

Assessment of whether the programme continues to represent value for money?

Overall view on whether the programme is good value for money. If not, why, and what actions need to be taken?

Quality of Financial Management

Consider our best estimate of future costs against the current approved budget and forecasting profile

Have narrative and financial reporting requirements been adhered to. Include details of last report

Have auditing requirements been met. Include details of last report

E Risk

Output Risk Rating: L/M/H

Enter Low, Medium or High, taken from the overall Output risk score calculated in ARIES

Overview of Programme Risk

What are the changes to the overall risk environment/ context and why?

Review the key risks that affect the successful delivery of the expected results.

Are there any different or new mitigating actions that will be required to address these risks and whether the existing mitigating actions are directly addressing the identifiable risks?

Any additional checks and controls are required to ensure that UK funds are not lost, for example to fraud or corruption.

Outstanding actions from risk assessment

Describe outstanding actions from Due Diligence/ Fiduciary Risk Assessment/ Programme risk matrix

Describe follow up actions from departmental anti-corruption strategies to which Business Case assumptions and risk tolerances stand

F: Commercial Considerations

Delivery against planned timeframe. Y/N

Compare actual progress against the approved timescales in the Business Case. If timescales are off track provide an explanation including what this means for the cost of the programme and any remedial action.

Performance of partnership

How well are formal partnerships/ contracts working
Are we learning and applying lessons from partner experience
How could DFID be a more effective partner

Asset monitoring and control
Level of confidence in the management of programme assets, including information any monitoring or spot checks

G: Conditionality

Update on Partnership Principles and specific conditions.
For programmes for where it has been decided (when the programme was approved or at the last Annual Review) to use the PPs for management and monitoring, provide details on:

a. Were there any concerns about the four Partnership Principles over the past year, including on human rights?
b. If yes, what were they?
c. Did you notify the government of our concerns?
d. If Yes, what was the government response? Did it take remedial actions? If yes, explain how.
e. If No, was disbursement suspended during the review period? Date suspended (dd/mm/yyyy)
f. What were the consequences?

For all programmes, you should make a judgement on what role, if any, the Partnership Principles should play in the management and monitoring of the programme going forward. This applies even if when the BC was approved for this programme the PPs were not intended to play a role. Your decision may depend on the extent to which the delivery mechanism used by the programme works with the partner government and uses their systems.

H: Monitoring and Evaluation

Evidence and evaluation
Changes in evidence and implications for the programme
Where an evaluation is planned what progress has been made
How is the Theory of Change and the assumptions used in the programme design working out in practice in this programme? Are modifications to the programme design required?
Is there any new evidence available which challenges the programme design or rationale? How does the evidence from the implementation of this programme contribute to the wider evidence base? How is evidence disaggregated by sex and age, and by other variables?
Where an evaluation is planned set out what progress has been made.

Monitoring process throughout the review period.
Direct feedback you have had from stakeholders, including beneficiaries
Monitoring activities throughout review period (field visits, reviews, engagement etc)
The Annual Review process

Annex 1: IMF Annual Report

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

Fourth Year Annual Report to DFID
(for period April 2015 – March 2016)

Andrew Berg, Catherine Pattillo, Prakash Loungani, and Rupa Duttagupta

May 5, 2016

Table of Contents

1 Program Description

"Macroeconomic Research in Low-Income Countries" represents a strategic partnership in research between DFID 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 research 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 and will conclude in March, 2017. DFID will provide £9.45 million over the five years.

Our research agenda encompasses key components of the macroeconomic challenges facing LICs in the current global environment. We attempt in all cases to exploit the comparative advantage of the IMF, focusing on core macroeconomic challenges and bringing modern analytic tools to bear, tools that have proven useful in emerging markets and more developed countries, such as the application of inflation targeting to frontier emerging markets. Many issues are clearly critical to achieving development and sustained growth. The IMF focuses on those that are of critical macroeconomic relevance. But we concentrate on core macroeconomic issues, which are clearly also important for sustained growth and development, and which fall squarely in the Fund's area of expertise. Many of these core macroeconomic challenges are at 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 grave capacity challenges.

The agenda has eight broad topics:

- (1) Monetary and exchange rate policies
- (2) Public investment, growth, and debt sustainability
- (3) Macroeconomic management of natural resource wealth
- (4) Macroeconomic policies and income distribution
- (5) Role of financial deepening in fostering macroeconomic stability and sustained growth
- (6) Growth through diversification
- (7) Capital flows
- (8) Gender and macroeconomics

IMF staff members and project-funded researchers are collaborating to produce high-quality research papers that are aimed at high-level policymakers in LICs and in the IMF. In order to further maximize the policy impact and potential of the project's research outputs, all papers are being freely shared with DFID and external policy makers both through DFID's research portal and a dedicated project website maintained by the IMF. In addition to encouraging uptake of the work both with country and IMF authorities, other crucial components of this joint research project include frameworks and tools designed 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.

Lead and Partner Organizations:
IMF and DFID

Start and End Dates:
Phase I: March 2012 to March 2015
Phase II: April 2015 to March 2017

Total Budget Approved:
£9.45 million over the five years with £5.8 million spent to date.

Countries Covered:

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 ountries that had recently graduated but still faced policy challenges similar to the PRGT eligible countries.

2 Overview of the Year

Progress and Achievements:

The fourth year of the project was highly productive, and we are pleased to report that we have exceeded each of the "high" targets outlined in the logframe for all but two outputs.[2] The team's work has been well received by senior IMF staff, IMF Executive Board members, policymakers in LICs, and a wide array of researchers interested in macroeconomic issues in LICs. The project has produced 56 working papers and 24 published papers over the last four years, and this body of research has been incorporated into IMF Board papers, Staff Discussion Notes, country applications by IMF staff, and technical assistance missions.

The team continues to remain active and involved in contributing to IMF Board and policy papers. This year, we were involved with the Board paper "Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries," which draws from the last three years of extensive research on monetary policy issues in low-income countries. The paper highlights the team's technical assistance efforts with central banks in sub-Saharan Africa; for example, in coordination with the staff from the IMF-DFID team, the Central Bank of Kenya developed a forward-looking policy recommendation process underpinned by model based forecasts and made changes to its organizational structure. Our team also contributed to an IMF Staff Discussion Note "From Ambition to Execution: Policies in Support of Sustainable Development Goals," which was launched by the IMF's Managing Director ahead of the UN Summit on Sustainable Development Goals held in New York in September 2015. The paper's main assessment and recommendations on sustaining inclusive growth and reducing income inequality in developing countries draw on the application of the Macroeconomic and Distribution Analysis Model (MDAM) (which was built by staff under the DFID project) to analyze the growth and distributional implications of macroeconomic and structural reforms in different countries. In fact, the MDAM model has now been applied to Ethiopia and Malawi, work is ongoing for Bolivia and Honduras and further uptake is being considered for other developing countries. Similarly, the paper's discussion on the importance of economic diversification for sustained growth also draws on earlier work under the DFID project in this topic.

During the UN Conference on Financing for Development in July 2015 in Addis Ababa, the IMF Deputy Managing Director expressed the IMF's commitment to developing and fragile economies; furthermore, the IMF has identified several initiatives to assist member countries achieve the Sustainable Development Goals (SDGs). These include providing support for the infrastructure policy support initiative and deepening policy advice on core SDGs that are macro-critical, which includes gender and inequality measures. Our research on public investment, growth, and debt sustainability (Buffie et al., (2012), Melina et al. (2014)) and capital flows (Araujo et al. (2015)) has contributed to the Fund's efforts on financing for development, and has been cited in an IMF Board paper "Financing for Development: Revisiting the Monterrey Consensus" and in "The Role of the IMF in Supporting the Implementation of the Post-2015 Development Agenda." Results and data from the global survey on gender budgeting will feed into an upcoming UN high-level panel report on women's economic empowerment.

This year, we have built upon our macroprudential policy research (discussed in the third Annual Report), and as a result, we have been able to influence the IMF's new effort to operationalize macroprudential work in low-income countries. We have also updated a database on capital flows in LICs to add two additional years (2013, 2014). The earlier work on capital flows and capital account management measures also helped support research on the experience of low-income developing countries with capital flows and capital controls, which featured in a thematic chapter in the IMF's annual report on macroeconomic developments and prospects in low-income developing countries.

IMF country teams and authorities are actively using the research papers and toolkits developed under this project. Some examples include:

[2] The two outputs are: Output 0 "Thematic areas of IMF policy influenced and made LIC-specific" and output 4.1 "Commissioned Papers." We achieved the medium target on these outputs.

- The public investment, growth, and debt sustainability framework, developed by Buffie et al. (2012) to analyze the effects of public investment scaling-up on growth and debt sustainability, has been widely used in LICs. To date, Fund staff have completed the application of the model and extensions to 14 countries and a custom and economic union—Afghanistan, Benin, Burkina Faso, Cape Verde, CEMAC, Cote d'Ivoire, Ethiopia, Ghana, Lesotho, Liberia, Maldives, Rwanda, Senegal, Togo, and Yemen—in the context of IMF Article IV consultations, staff visits, program reviews, and donor meetings. The toolkit complemented the IMF-World Bank DSF by helping country teams and authorities to quantitatively evaluate the impacts of public infrastructure investment, contained in national development plans or PRSPs, on country's borrowing limits and growth prospects. This work allows LICs to explore the implications of different financing schemes, e.g. through concessional, external commercial and domestic borrowing, of public investments since many of those ambitious, front-loaded investments are not fully funded by aid, resulting in a financing gap that needs to be covered. Extensions of the model have analyzed the implications of investing not only in infrastructure, but also in energy (e.g., Ethiopia and Senegal) or security (e.g. Afghanistan). On-going applications include Benin, Guinea, Kyrgyz Republic, Nicaragua and Vanuatu.

- Fund staff also applied the debt sustainability model developed by Melina et al. (2014) to assess the macroeconomic implication of investment surges in natural resource-rich developing countries. To date, staff have completed applications to Angola, Chad, Kazakhstan, Mozambique, Niger, Myanmar, Mongolia and Botswana. In the IMF Article IV consultation, the model simulations for Botswana highlighted the importance of complementing the scaling-up process with reforms that improve the quality and the efficiency of public investment, thus strengthening the economic impact of public investment.

Technical assistance and training has also been a central feature of our work this past year. The examples below highlight the team's offerings, and in the coming year, we have additional courses and technical assistance missions planned.

- Under funding from the IMF Regional Technical Assistance Centers (RTACs) and the DFID project, the team has continued to provide capacity development (CD) in the form of technical assistance and customized training to central banks to integrate further the project's research. CD in monetary policy analysis and forecasting was provided to the central banks of Tanzania, Kenya, and Ghana. The IMF and AFRITAC East organized a two-week Customized Training (CT) mission to the Bank of Tanzania (BoT) in November-December, 2015. During a mission to Kenya in 2015, the Central Bank of Kenya and IMF staff agreed on the importance of gradually re-aligning the interbank interest rate with the policy rate to achieve the inflation objective. Work in Ghana continued this past year, as the IMF and AFRITAC West2 arranged a three-week technical assistance (TA) mission. In addition, seven staff from the Bank of Ghana (BOG) visited the IMF in August, 2015 to work with a team of IMF economists on Macroeconomic Modelling and Monetary Policy Analysis, as a part of the continuing initiative to reinforce the BOG's existing inflation targeting framework, and as an immediate follow-up on the June/July TA mission to Ghana. The workshop focused on upgrading the BOG's macroeconomic modelling toolkit and analysing recent inflation trends.

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- In collaboration with the IMF's Institute for Capacity Development (ICD), IMF economists offered training on Macroeconomic Management in Resource Rich Countries. The DFID team presented on "Diversification and Natural Resources" and "A model-based approach to analyzing resource revenues, growth, and debt sustainability" in March 2015 and January 2016. The course was attended by mid- to senior-level officials from central banks, ministries of finance and other relevant government agencies involved in the design and execution of policies in resource-rich countries.

- In August 2015, IMF staff taught a course to the technical staff from the Central Bank of Lesotho and from the Ministry of Finance on the theory of dynamic general equilibrium models and on a model that IMF staff developed to analyze the impact on public debt and growth of a public investment in an electricity exporting dam with a calibration for a potential project in Lesotho.
- This year, Fund staff streamlined the toolkits of public investment, growth, and debt sustainability, for the DIG model developed by Buffie et al (2012) and DIGNAR model developed by Melina et al. (2014), to make them easier for the policymakers in LICs to implement. Now, both DIG and DIGNAR toolkits offer user-friendly Excel-based interfaces for simulating policy scenarios analyzing the macroeconomic consequences of public investment scaling up. Without the need for prior Matlab programming knowledge, users of the toolkits can directly input country-specific calibration into Excel, which returns customized results and plots in user-friendly spreadsheet format. The improvement of the toolkits has made our team's framework more widely available and readily accessible to policy makers in LICs. The toolkits were the subject of a course for IMF staff in January 2016, and in March 2016, in partnership with East AFRITAC, the team offered a five-day workshop at the Bank of Tanzania to train government officials from Kenya, Tanzania, and Uganda on macro-fiscal issues in natural resource management. We continue to see interest from IMF mission teams and country authorities regarding our export and output diversification toolkit, and have had more than seven country teams work on applications this year. We note that at an IMF Board session, an Alternate Executive Director who represents more than 20 African nations expressed how useful the toolkit is and wanted to know how it could be better integrated into IMF surveillance. We have begun work on expanding the toolkit to cover services (it currently covers only goods) and to update coverage through 2014.

- A goal of the IMF-DFID project is to expand the network of researchers working on macroeconomic
- issues in LICs. The "Conference on Financing for Development" was held on April 15–17, 2015, at the Graduate Institute of International and Development Studies in Geneva, Switzerland. Co-sponsored by the IMF, DFID, the Graduate Institute, and the Center for Finance and Development, the conference brought together academics and policy makers to discuss innovative strategies aimed at catalyzing domestic and external financing from the official and private sectors. A selection of papers was published in a special issue of the *Oxford Review of Economic Policy*. Prof. Chris Adam (University of Oxford), Professor Ugo Panizza (Graduate Institute of International and Development Studies), Prof. David Vines (University of Cambridge), and Andrea Presbitero (IMF) wrote the introduction, and the issue includes a contribution by Prof. Jeff Sachs (Columbia University).
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- **Challenges and Disappointments:**

As we noted in last year's annual report, IMF and DFID procedures change over time and/or become more complex; this requires frequent attention and cross-departmental coordination at the IMF. We have also added two managers to the project. Prakash Loungani has assumed Andy Berg's former role as division chief of the Research Department's Development Macroeconomics division, while Rupa Duttagupta has taken over Cathy Pattillo's role as division chief for the Strategy, Policy, and Review (SPR) Department's Developing Markets Strategy unit. Andy Berg has been promoted to deputy director in the Institute for Capacity Development, while Cathy Pattillo has been promoted to assistant director in SPR.

Finally, a challenge is striking the right balance between on the one hand building on the strengths and continuity of the project and on the other hand, keeping the research agenda fresh and innovative. However, we think the renewed and broader mix of IMF stakeholders should help in this regard.

- **Lessons Learned:**

As we have noted earlier, "uptake" and research require different management and quality control methods. Increasing the uptake of our work typically requires close collaboration with other departments (such as the African Department) as well as with central bank staff and country authorities whereas our work on research papers may or may not involve co-authors from outside our divisions.

DFID contractual staff interested in transitioning to regular IMF staff positions have seen continued success in securing these positions. This is another way of integrating researchers who were typically new to LIC research into the IMF.

3 Logframe Outputs

This research project has four main output categories:

1) Produce high quality, policy relevant research on macroeconomic issues affecting LICs.
2) Have IMF research products produced under this project used 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 3 provides a summary of the research outputs for the four years of this project. As can be seen in the table, we have met, and in many cases exceeded, the "High" target for most outputs.

Table 3
Logframe Outputs

	Type of Output	Year 1 Outputs	Year 2 Outputs	Year 3 Outputs	Year 4 Outputs	Total	Output Targets for End of Year 4	
1.1	Working Papers	13	17	10	16	56	H	52
							M	45
							L	40
1.2	Published Papers	1	6	9	8	24	H	9
							M	4
							L	3
1.3	Books	0	0	0	0	0	H	0
							M	0
							L	0
2.1	Uptake by IMF Teams	9	12	13	14	48	H	26
							M	14
							L	8
2.2	Uptake by Authorities	1	2	4	2	9	H	8
							M	5
							L	4
3.1	High-Level Policy Conferences attended by senior IMF staff	6	4	2	1	13	H	8
							M	6
							L	4
3.2	Results of papers reflected in IMF board discussions and policy papers	4	4	3	2	13	H	8
							M	4
							L	3
3.2.1	Results of papers reflected in IMF board papers	3	3	2	1	9	H	6
							M	4
							L	3
4.1	Commissioned Papers	0	13	0	0	13	H	16
							M	10
							L	6
4.1.1	Toolkits	0	0	1	1	2	H	2
							M	1
							L	0
4.2	Attendance of External Researchers at High-Level Policy Conferences	6	5	5	15	31	H	8
							M	6
							L	4
4.3	Outputs disseminated in e-newsletter and updated public web page	2	4	4	4	14	H	14
							M	8
							L	6
O.1	Thematic areas of IMF policy influenced and made LIC-specific	3	2	0	0	5	H	6
							M	3
							L	2

<u>Output 1: Produce high quality, policy relevant research on macroeconomic issues affecting LICs</u>

1.1 – Working papers

This year, we completed 16 working papers, bringing the total to 56 over the four years. The papers cover five of the broad topics for this research project: Monetary and exchange rate policies; Public investment, growth, and debt sustainability; Macroeconomic management of natural resource wealth; Role of financial deepening in fostering macroeconomic stability and sustained growth; and Gender and macroeconomics.

a) Monetary and Exchange Rate Policy in Low-Income Countries

The goal of our research on monetary and exchange rate policies in LICs is to advance the understanding of existing regimes as well as the macroeconomic environment in which monetary policy operates. This year, we have completed four working papers.

1. Many LICs do not use interest rates as their main monetary policy instrument. Gonçalves (2015) examines the possibility that central banks in LICs are de facto pursuing a strategy more akin to a Taylor rule. Estimation of small-scale models for Kenya, Uganda, and Tanzania reveals that monetary policy in these countries respects the Taylor Principle; that is, on average, nominal interest rates have been pushed higher by more than one-to-one with inflation by these countries' central banks.

2. Abuka et al. (2015) empirically assess the bank lending channel in Uganda during 2010–2014 using a supervisory dataset of loan applications and granted loans, and find that an increase in interest rates reduces the supply of bank credit both on the extensive and intensive margins, and there is significant pass-through to retail lending rates. Findings document a strong bank balance sheet channel, as the lending behavior of banks with high capital and liquidity is different from that of banks with low capital and liquidity. Overall, results indicate significant real effects of the bank lending channel in developing countries.

3. Portillo et al. (2016) introduce subsistence requirements in food consumption into a simple new-Keynesian model with flexible food and sticky non-food prices, and study how the endogenous structural transformation that results from subsistence affects the dynamics of the economy, the design of monetary policy, and the properties of inflation at different levels of development. The work derives a welfare-based loss function for the monetary authority and shows that optimal policy calls for complete (in some cases nearcomplete) stabilization of sticky-price non-food inflation, despite the presence of a food subsistence threshold. Results show that subsistence amplifies the welfare losses of policy mistakes, however, raising the stakes for monetary policy at earlier stages of development.

4. Airaudo et al. (2016) analyze coordination of monetary and exchange rate policy in a two-sector model of a small open economy featuring imperfect substitution between domestic and foreign financial assets. The central finding is that management of the exchange rate greatly enhances the efficacy of inflation targeting. In a flexible exchange rate system, inflation targeting incurs a high risk of indeterminacy where macroeconomic fluctuations can be driven by self-fulfilling expectations. Moreover, small inflation shocks may escalate into much larger increases in inflation ex post. Both problems disappear when the central bank leans heavily against the wind in a managed float.

b) Public Investment, Growth, and Debt Sustainability

On the topic of public investment, growth, and debt sustainability, many LICs are working to deliver on an ambitious promise to scale up public investment to meet huge needs in infrastructure, energy, and other critical sectors. However, this scaling up is often funded by non-concessional loans so that attention to debt sustainability is important. To examine these issues, our team has completed four working papers this year.

5. Dreher and Lohmann (2015) bring the aid effectiveness debate to the sub-national level. They hypothesize that previous non-robust results in the literature regarding the effects of aid on development arise due to the effects of aid being insufficiently large to measurably affect aggregate outcomes. Using highly disaggregated geo-coded data for World Bank aid in 130 countries over the 2000-2011 period, the paper tests whether aid affects development, measured as nighttime light growth. Overall, the paper finds significant correlations between aid and growth in sub-national regions but no causal effects. (Also published in Oxford Review of Economic Policy.)

6. Atler et al. (2015) analyze the tradeoffs between savings, debt and public investment in the Republic of Congo. Results highlight the risks to fiscal and capital sustainability of oil exporting countries from a large scaling-up in public investment and oil price volatility in view of a projected decline in the oil revenue to GDP ratio. Structural reforms that improve public investment efficiency can promote a relatively faster buildup of sustainable public capital and sustain higher non-oil growth without adversely affecting the debt ratio or savings.

7. Recent policy recommendations suggest that the output growth 'bang' for each additional 'buck' of public investment depends on the efficiency of public investment spending. Berg et al. (2015) argue that high-efficiency and low-efficiency countries may have similar growth impacts from additional public investment spending. This is because efficiency and scarcity of public capital are likely to be inversely related across countries. Efficiency and the rate of return need to be considered together in assessing the impact of increases in investment.

8. Presbitero et al. (2015) examine the ability of low-income developing countries[3] to issue bonds in international capital markets using a dataset that includes emerging markets and developing economies (EMDEs) that issued sovereign bonds at least once during the period 1995-2013 as well as those that did not. Results show that an EMDE is more likely to issue a bond when, in comparison with non-issuing peers, it is larger in economic size, has higher per capita GDP, and has stronger macroeconomic fundamentals and government. Spreads on sovereign bonds are lower for countries with strong external and fiscal positions, as well as robust economic growth and government effectiveness. With regard to global factors, the results show that sovereign bond spreads are reduced in periods of lower market volatility.

9. Government spending is an important policy instrument in LICs, both to counteract business cycles and to promote growth. Despite its importance, few efforts have been devoted to study fiscal policy effects in these countries. Shen et al. (2015) develop a new-Keynesian small open economy model to show that some of the prevalent features of LICs—different types of financing including aid, the marginal efficiency of public investment, and the degree of home bias—play a key role in determining the effects of fiscal policy and related multipliers in these countries.

[3] The IMF established the low-income and developing countries group in 2014. The group includes 60 countries that met 2 criteria: 1) they were designated PRGT-eligible in the 2013 PRGT eligibility exercise and 2) their per capita gross national income was less than the PRGT income graduation level for non-small states.

10. The voluminous literature comparing public-private partnerships (P3s) and own-investment (OI) by the public sector is dominated by contributions from microeconomic theory. Buffie et al. (2016) lend macroeconomics a voice in the debate by investigating the repercussions of P3 vs. OI in a dynamic general equilibrium model featuring private capital accumulation and involuntary unemployment with efficiency wages. Typically P3s cost more but produce higher-quality infrastructure and boast a better on-time completion record than OI; consequently, they are comparatively more effective in reducing underinvestment in private capital, underinvestment in infrastructure, unemployment and poverty. The asymmetric impact on macro externalities raises the social return in the P3 2 - 9 percentage points relative to the social return to OI, depending on whether the externalities operate singly or in combination and on whether P3 enjoys an advantage in speed of construction.

c) Macroeconomic Management of Natural Resources

Our third topic of research focuses on the management of natural resources in LICs. Our work in this area will assist country authorities in LICs to manage natural resource revenues by examining the macroeconomic consequences of different savings and investment strategies. Research on this topic also examines the current account norm; that is, when a country receives a resource windfall, the appropriate current account deficit depends on the balance between investment at home and abroad (saving in a sovereign wealth fund). We also look at efficient government investment and the role that the private sector can play even when externalities are present.

11. Gupta et al. (2015) utilize a structural model-based approach to analyze macroeconomic impacts of different public investment strategies on debt, consumption, sovereign wealth funds, and real exchange rates. They apply the model to Mongolia and draw policy recommendations from the analysis. Findings suggest fiscal policy adjustment, particularly moderating infrastructure investment and optimizing investment efficiency is needed to maintain macroeconomic and external stability, as well as to boost long-term sustainable growth for Mongolia.

12. Warner (2015) looks at whether economic rents created by the global boom in hydrocarbon, metal, and mineral prices since 2000 promoted productivity improving change in other parts of the booming economies. To properly address this question, the empirical strategy considers new data on GDP per person outside the resource sector. Despite having vast sums to invest, GDP growth per-capita outside of the booming sectors in these economies appears on average to have been no faster during the boom years than before. The paper finds no country in which (non-resource) growth per person has been statistically-significantly higher during the boom years. Overall, there is little evidence the booms have left behind the anticipated productivity transformation in the domestic economies. It appears that current policies are, overall, proving insufficient to spur lasting development outside resource-intensive sectors.

d) Capital Flows

13. Araujo et al. (2015) construct a new comprehensive dataset on gross private capital flows with special focus on non-FDI flows in low-income developing countries (LIDCs) and identify several shifting patterns of gross non-FDI private inflows to LIDCs. Since the mid 2000s, periods of surges in gross non-FDI private inflows in LIDCs are broadly comparable to those of emerging markets (EMs); moreover, gross non-FDI inflows to LIDCs are on average much lower than those to EMs. The LIDC top quartile gross non-FDI inflow is comparable to the EM median inflow and converges to the EM top quartile inflow.

14. Araujo et al. (2015) examine the cyclicality of private capital inflows to low-income developing countries (LIDCs) over the period 1990-2012. The empirical analysis shows that capital inflows to LIDCs are procyclical, yet considerably less procyclical than flows to more advanced economies. The analysis also suggests that flows to LIDCs are more persistent than flows to emerging markets (EMs). In terms of policy implications, these findings suggest that private capital inflows are likely to become more procyclical as LIDCs move along the development path, which could in turn raise several associated policy challenges, not the least concerning the reform of traditional monetary policy frameworks. The authors also updated the database to include 2013-2014 and summarized the experience of LICs with capital inflows in recent years in the Spring 2016 World Economic Outlook.

e) Financial Deepening and Macroeconomic Stability and Sustained Growth

Financial deepening and macro-stability has been identified as a priority area in the years ahead for the Fund, and our team has produced another working paper on this important topic this year.

15. Karayalcin and Pintea (2015) construct a three-sector model to examine why many developing countries have such large fractions of their workforces employed in low-productivity agricultural sectors. The authors show that 1) barriers to labor movement from subsistence farming to modern agriculture and 2) productivity differences and transportation costs are key factors. Model calibrations shows that productivity improvements in modern agriculture may actually increase the employment share of agriculture in countries where subsistence agriculture is initially large. Thus, policies should first address barriers to labor mobility and then focus on increasing the productivity of modern sectors or decreasing transportation costs to reduce welfare losses.

f) Gender and macroeconomics

16. Stotsky et al. (2016) examine trends in gender equality and women's development using individual indicators and summary indexes. The authors construct time-consistent versions of the UNDP's Gender Development Index and Gender Inequality Index to examine time trends. In recent decades, the world has moved closer to gender equality and narrowed gaps in education, health, and economic and political opportunity; however, substantial differences remain, especially in South Asia, the Middle East, and sub-Saharan Africa.

Output 1.2 - Published Papers:

During the third year, we published seven papers externally, as well as a book chapter in the *The Oxford Handbook of Africa and Economics.*

Two papers below are published in the May 2016 issue of the *Journal of Development Economics.*

1. Current account norms in natural resource rich and capital scarce economies
   Juliana D. Araujo , Bin Grace Li , Marcos Poplawski-Ribeiro , Luis-Felipe Zanna

2. Too much and too fast? Public investment scaling-up and absorptive capacity
   Andrea Presbitero

A paper by Markus Eberhardt and Andrea Presbitero was published in the September 2015 issue of the *Journal of International Economics*

3. Public debt and growth: Heterogeneity and non-linearity

A paper by Giovanni Melina, Susan Yang, and Felipe Zanna was published in the January, 2016 issue of *Economic Modelling*.

4. Debt Sustainability, Public Investment, and Natural Resources in Developing Countries: The DIGNAR Model

A chapter by Andrew Berg, Stephen O'Connell, Catherine Pattillo, Rafael Portillo, and Filiz Unsal was published in *The Oxford Handbook of Africa and Economics: Volume 2: Policies and Practices.*

5. Monetary Policy Issues in Sub-Saharan Africa

Three papers were published in a special issue of the *Oxford Review of Economic Policy*.

6. Aid and domestic resource mobilization with a focus on Sub-Saharan Africa
   Oliver Morrissey
7. On measuring loan concessionality in Official Development Assistance
   Daniel Roodman
8. Aid and growth at the regional level
   Axel Dreher and Steffen Lohmann

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

We have been collaborating closely with country teams and partner authorities over the fourth year of the project. These efforts have resulted in 14 different country applications of the models and uptake of the work by country authorities in Ethiopia and Malawi. In addition, the team has offered workshops, training, and courses to IMF staff and country partner authorities and has developed a user-friendly Excel based interface that allows country teams and authorities to use the DIG and DIGNAR models.

Output 2.1 - Country Applications with IMF Country Teams:

We have completed 12 applications covering five topics: 1) Monetary Policy; 2) Public investment, growth, and debt sustainability; 3) Macroeconomic management of natural resources; 4) Current account norm; and 5) Inequality.

a) Monetary Policy

1. Tanzania

The IMF and AFRITAC East organized a two-week Customized Training (CT) mission to the Bank of Tanzania (BoT) in Dar es Salaam during November-December, 2015. The mission assisted the BoT in further refining its Forecasting and Policy Analysis System (FPAS) as an integral part of strengthening BoT's monetary policy formulation process. The mission focused on upgrading the BoT's macroeconomic modeling toolkit to allow for better analysis of the fiscal policies. The mission also assisted the BoT staff in constructing a new baseline forecast and helped open a detailed discussion about the way the BoT manages its liquidity operations in order to get the definition of reserve money in the model consistent with the BoT framework.

2. Kenya

During the 2015 AFR mission to Kenya, the IMF team adopted a simple New-Keynesian quarterly projection model (QPM) to analyze monetary policy based on a medium-term inflation outlook. Policy discussions on the inflation outlook focused on the relative weights of demand and supply factors. The IMF staff argued that inflation risks would remain elevated in the near term, reflecting a combination of continued demand pressures from a 2015/16 fiscal impulse and supply shocks from rising non-food non-fuel inflation. The Central Bank of Kenya (CBK) staff, however, saw a recent pickup in inflation as reflecting mostly temporary supply shocks which would subside in the second half of 2016. Notwithstanding some differences in the assessment of the near-term inflation outlook, the CBK and the staff agreed on the importance of gradually re-aligning the interbank interest rate with the policy rate to achieve the inflation objective.

3. Ghana

The IMF and AFRITAC West2 organized a three-week technical assistance (TA) mission to Accra, Ghana. The mission assisted the Bank of Ghana (BOG) with strengthening its monetary policy formulation process. The mission followed up on the February, 2015 scoping TA mission, which assessed the BOG's policy formulation and communication in the context of the inflation targeting (IT) regime. The current mission focused on the following IT regime pillars: i) reorganizing BOG structure to support the policy formulation process; ii) enhancing monetary policy deliberations by adjusting the process leading to policy decisions and increasing the extent of interactions between the staff and the Monetary Policy Committee; and iii) further strengthening the quality and sustainability of the staff's forecasting and analytical capacity.

4. Uganda

IMF staff visited Kampala during May, 2015 as part of a joint IMF-Bank of Uganda (BOU) research project on monetary policy. The project explores the link between monetary policy and bank lending during the period 2010-2014 using a large micro-level data set from the Ugandan credit register. The project also investigates how the response of credit supply to changes in the monetary policy stance is influenced by banking sector conditions, and distinguishes between bank loans denominated in local and foreign currencies. This collaboration offers a unique opportunity to undertake the first analysis of the bank lending channel in a sub-Saharan economy based entirely on micro data.

b) Public investment, growth, and debt sustainability

5. Maldives: Selected Issues

In light of an ambitious 4-year plan for scaling up of public investment, Maldives' Article IV consultations focused on issues of effective management of infrastructure scale up to maximize growth and limit challenges to debt sustainability. Adapting the model to Maldives recognized its heavy dependence on tourism—the main beneficiary of the proposed infrastructure projects—and uncertainty about its future return due to the technical complexity to expand Male International Airport and the need for supporting actions by the private sector—investments in resorts and transportation. Staff discussed the analytic results with the authorities. The baseline model suggests a sustained increase in growth triggered by a successful implementation of the scaling up accompanied by a gradual rise in private investment, private capital and consumption over the medium term. The model also implies a substantial increase in tax rates and/or cuts in public transfers to contain public deficits, which clearly illustrates the pressure on public finances and policy options posed by the scaling up projects. Moreover, in case of poor project management that results in lower returns, public investment would not add much to growth but would rather drive fiscal deficit and debt levels further away from the rules under the Fiscal Responsibility Act.

6. Lesotho

IMF staff developed a dynamic general equilibrium model to analyze the impact on public debt and growth of a public investment in an electricity exporting dam and applied it to a potential project in Lesotho. The results were published in the 2015 Article IV report.

7. DIG Toolkit

The DIG toolkit provides a user-friendly Excel-based interface for simulating policy scenarios analyzing the macroeconomic consequences of public investment scaling up. Without the need for prior Matlab programming knowledge, the user provides a country-specific calibration, specifies exogenous shocks, and chooses customized plots and variables to be exported back to Excel. The toolkit was used to teach an ICD course for IMF staff in January 2016 and in a training course in Tanzania for country officials in the region in March 2016. It will be made openly available online.

c) Macroeconomic Management of Natural Resources:

8. Botswana

IMF staff visited Gaborone in December 2015 for the annual Article IV Consultation meetings. The discussions focused on policies to counteract the recent economic slowdown and on reforms and investments needed to foster sustainable growth. As part of the analysis, staff applied the DIGNAR (Debt, Investment, Growth, and Natural Resources) model of Melina et al. (2014) to assess the potential macroeconomic effects of a scaling-up of public investment. The model was calibrated to reflect features of Botswana and different scaling-up scenarios were considered. The model simulations highlighted the importance of complementing the scaling-up process with reforms that improve the quality and the efficiency of public investment, thus strengthening the economic impact of public investment. The results of the analysis are included in a Box and an Appendix in the Staff Report.

9. DIGNAR Model Toolkit

The toolkit provides a user-friendly Excel-based interface for simulating policy scenarios with the DIGNAR model. It comprises an 'input' spreadsheet where the user provides the country-specific calibration and selects necessary options to simulate desired scenarios and produce plots in a customized way. The toolkit also saves the simulation outcomes in an 'output' spreadsheet. It assumes no knowledge of Matlab programming skills.

d) Current Account Norm

10. CEMAC: 2015 Article IV Consultation

IMF staff applied the Current Account model developed by Araujo et al. (2013) to CEMAC in 2015. The model seeks to determine the optimal current account for an energy exporting developing country with a dynamic general equilibrium model. IMF staff helped the respective IMF country team with handling the model and the results were published in the 2015 Article IV report.

11. Congo: 2015 Article IV Consultation

IMF staff applied the Current Account model developed by Araujo et al. (2013) to Congo in 2015. Results were published in the 2015 Article IV report.

12. Gabon: 2015 Article IV Consultation

Using the current account model developed by Araujo et al. (2013), the team solved for a current account norm based on a small open economy model with private and public investment and several frictions such as absorptive capacity constraints, inefficiencies in investment, and borrowing constraints. Results from this methodology suggest an overvaluation of 3.4 and 7.2 percent under percent under cost overrun assumptions of 60 and 40 percent respectively. Higher absorptive capacity constraints are associated with higher current account benchmarks as it is optimal to reduce the pace of investment.

13. Ecuador: Selected Issues Paper

The October 2015 Selected Issues Paper on Ecuador applied the current account model developed by Araujo et al. (2013) to analyze the impact of an oil price reduction on the current account balance of Ecuador.

- **e) Inequality**

14. Fiscal Policy and Inequality in Uganda

During the 2015 Article IV mission to Uganda, the IMF team analyzed the quantitative impact of tax policy and administration improvements on inequality, applying a model of heterogeneous households and fiscal policy, and held a workshop with staff of the Uganda Revenue Authority. The analysis shows that increasing value-added tax revenues would have a limited, adverse impact on equality while effectively raising revenues, and highlights the importance of taking into account the high level of informality in the Ugandan economy and changing incentives of economic agents in designing fiscal policy measures.

Output 2.2 - Uptake by Country Authorities:

We have had two successful country authority engagements this year.

1. Ethiopia

- To strengthen its surveillance engagement on inequality issues with member countries, the IMF has chosen several pilot countries, one of which is Ethiopia. During a recent Article IV mission to Ethiopia, the IMF-DFID team presented analytical work on "Economic Reforms and Broad Based Growth in Ethiopia" at the National Bank of Ethiopia (NBE) and discussed the macroeconomic and distributional implications of a set of reforms aimed at improving revenue mobilization, efficiency, and broad based growth using a dynamic general equilibrium model tailored to Ethiopia. While in Ethiopia, the team studied the macroeconomic and distributional impact of two policies that Fund staff have recommended to increase domestic resource mobilization: (i) streamlining tax incentives, and (ii) reforming Development Bank of Ethiopia funding modality. While the results show that the proposed reforms generate macroeconomic growth (0.5% increase in GDP per year), mostly due to higher investment in manufacturing, the distributional cost in terms of inequality and poverty are high. To sustain inclusive growth, the team proposed three inclusive growth policies: (i) cash transfers (expansion of the PSNP), (ii) rural-urban migration, and (iii) financial sector deepening.
- The team's work has been incorporated into the World Bank's Systematic Country Diagnostic for Ethiopia.

2. Malawi

- The government of Malawi is considering reforming its "Farm Input Subsidy Program (FISP)" with the objective of generating fiscal space and improving the efficiency of expenditure. As part of the recent Article IV consultation in Malawi IMF staff presented the analytical work developed by SPR, RES, and AFR, on "Macroeconomic and Distributional Implications of FISP Reform in Malawi." The results suggest that the trade-off in the payoffs between efficiency and equity with the proposed reform can be ameliorated with compensatory measures. The analysis was presented to the authorities at the Ministry of Finance, and to the donor community. The results generated intense debate, and particular interest from the Minister of Finance who requested further engagement, possibly in the form of a technical assistance mission in the near future.

- **Courses and Workshops:**
- While not a separate output in the logframe, courses and workshops offered by the team offer a unique opportunity to engage with country authorities and IMF country teams. During the fourth year, we held six workshops.

1. BOG-IMF Workshop on Macroeconomic Modelling and Monetary Policy Analysis
   - As a part of the continuing initiative to reinforce Bank of Ghana's existing inflation targeting framework, and as an immediate follow-up on the June/July technical assistance mission to Ghana, the team organized a two-week workshop on Macroeconomic Modeling and Monetary Policy Analysis with the Bank of Ghana from August 10-21, 2015. The workshop focused on upgrading the BOG's macroeconomic modeling toolkit and analyzing recent inflation trends. Seven BOG experts, who are core to supporting the BOG policy formulation process, along with IMF staff attended.

2. Macroeconomic Policy and Income Inequality
   - The IMF-DFID team hosted a second workshop on "Macroeconomic Policy and Income Inequality" on October 22-23, 2015. The workshop featured research papers by academics, as well as a few IMF staff papers. The focus of this year's workshop was on innovative research papers on selected macro and income distribution themes using related methodological approaches. Topics included fiscal policy, resource misallocation, and structural transformation.

3. Workshop on Gender Responsive Budgeting
   - The IMF-DFID group hosted a second workshop on gender budgeting on February 1-2, 2016 at the IMF Headquarters. Along with the authors involved in the work on six regional chapters, attendees included members of the advisory committee for the project and representatives from UN Women, World Bank, and UNICEF. The working papers and a publically-available toolkit on gender responsive budgeting efforts should be available in the fall.

4. Workshop on the Macro-Fiscal Issues in Natural Resource Management
   - In partnership with East AFRITAC, a five-day workshop was held from February 29 to March 4, 2016, at the Bank of Tanzania to train government officials from Kenya, Tanzania, and Uganda on macro-fiscal issues in natural resource management. The course aimed at providing tools to assess the macroeconomic impacts of scaling up public investment in the face of a resource windfall, and targeted officials from the Ministries of Finance and Energy as well as central banks involved in the analysis of the implications of revenue windfalls and the design of fiscal policies for resource revenue management. The workshop provided a balanced mix of the theoretical underpinnings and the practical aspects of the DIG and DIGNAR models. Making use of an Excel-based toolkit, participants were able to simulate policy scenarios and complete their assignments without the need for Matlab programming knowledge.

5. Central Bank of Lesotho Workshop
   - IMF staff visited Maseru in August 2015 at the same time of the IMF Article IV mission. During this mission IMF staff taught a course to the technical staff from the Central Bank of Lesotho and from the Ministry of Finance on the theory of dynamic general equilibrium

models and on a model that IMF staff developed to analyze the impact on public debt and growth of a public investment in an electricity exporting dam with a calibration for a potential project in Lesotho.

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6. ICD Course on Macroeconomic Management in Resource Rich Countries

- The DFID team presented on "Diversification and Natural Resources" and "A model-based approach to analyzing resource revenues, growth, and debt sustainability" March 3-18, 2015. The course was attended by mid- to senior-level officials from central banks, ministries of finance and other relevant government agencies involved in the design and execution of policies in resource-rich countries.

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

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

Conference on Financing for Development

A conference focusing on the post-2015 development agenda was held at the Graduate Institute of International and Development Studies in Geneva, Switzerland, on April 15–17, 2015. Co-sponsored by the IMF, DFID, the Graduate Institute, and the Center for Finance and Development, the conference brought together academics and policy makers to discuss innovative strategies aimed at catalyzing domestic and external financing from the official and private sectors. A selection of papers has been published in a special issue of the *Oxford Review of Economic Policy*.

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

During the fourth year, the results of our research have been reflected in one IMF Board paper and one Staff Discussion Note.

IMF Board Paper:

Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries

Over the past three years, the IMF-DFID team has done extensive research on monetary policy issues in LICs. These efforts have significantly contributed to a new IMF policy paper, "Evolving Monetary Policy Frameworks in Low-income and Other Developing Countries," which examines how LICs can adopt forward-looking frameworks that better anchor inflation and promote stability and growth. It draws on the successes of advanced, emerging, and some low- and lower-middle income countries to provide guidance on key elements of effective monetary policy frameworks for low- and lower-middle income countries. The paper highlights the team's technical assistance efforts with central banks in sub-Saharan Africa; for example, in coordination with the staff from the IMF-DFID team, the Central Bank of Kenya developed a forward-looking policy recommendation process underpinned by model based forecasts and made changes to its organizational structure. The team also worked with the Uganda, Ghana, and Rwanda country teams and central banks to prepare medium-term inflation projections and analyze economic conditions to assess the appropriateness of the monetary policy stance, and plans to continue working to institutionalize this initiative in a range of other countries.

Staff Discussion Note:

From Ambition to Execution: Policies in Support of Sustainable Development Goals

This SDN examines three areas of key relevance for achieving the sustainable development goals. It addresses economic transformation and inclusiveness priorities for developing countries, and environmental sustainability priorities for both developing and high-income countries. It emphasizes synergies between economic, social, and environmental objectives while also analyzing trade-offs and policies to minimize them. Although there is no one-size-fits-all strategy, some common threads can be identified, which can help countries—supported by the international community—to implement their development agenda of sustainable growth, inclusive growth, and environmental sustainability.

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

4.1.1 - Toolkits

DIGNAR Model Toolkit

The toolkit provides a user-friendly Excel-based interface for simulating policy scenarios with the DIGNAR model. It comprises an 'input' spreadsheet where the user provides the country-specific calibration and selects necessary options to simulate desired scenarios and produce plots in a customized way. The toolkit also saves the simulation outcomes in an 'output' spreadsheet. It assumes no knowledge of Matlab programming skills.

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

To expand the network of researchers working on macroeconomic issues in LICs, we were involved with 15 high-level policy conferences.

Prakash Loungani presented the DIGNAR model, with simulations produced by Felipe Zanna, Ioana Moldovan, and Giovanni Melina for frontier economies:

1. The Global Public Debt Outlook, Brookings Institution, March 2016

Chris Papageorgiou presented his work on *Export Quality in Advanced and Developing Economies: Evidence from a New Dataset* at three events:

2. World Bank Conference on Diversification, Mexico City, January 2016
3. AEA Meetings, San Francisco, January 2016
4. University of Cincinnati, October 2015

Chris also presented Economic Diversification in Low-Income Countries at:

5. SEA Meetings, New Orleans, November 2015
6. Growth-Macro Workshop, Nice France, June 2015

Marina Tavares and Adrian Peralta presented their paper, *The Distributional Implications of Fiscal Consolidation in Developing Countries*, at four institutions below:

7. Instituto Tecnológico Autónomo de México
8. Warsaw International Economic Meeting
9. The Northeast Universities Development Consortium Conference
10. Federal Reserve Bank of St. Louis

Grace Li presented the IMF working paper, From Natural Resource Boom to Sustainable Economic Growth: Lessons for Mongolia:

11. Singapore Economic Review Conference 2015

Grace also presented VAR meets DSGE: Uncovering the Monetary Transmission Mechanism in Low-Income countries:

12. Oxford seminar series

Filiz Unsal organized a session at the American Economic Association Annual Meeting titled "Macroprudential Policies for Low-Income and Developing Countries", and presented two papers.

13. Credit Booms and Macro-Prudential Policies in Low Income Countries
14. Macroprudential Policies in Low-Income Countries

Lisa Kolovich presented the team's work on gender budgeting at:

15. Europe Gender Summit (Berlin, November 2015)

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.

1. May 2015 Newsletter
2. August 2015 Newsletter
3. November 2015 Newsletter
4. February 2016 Newsletter

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 logframe reflects this overarching goal. Sections 2, 3, and 6 of this report address our uptake and engagement with beneficiaries in greater detail. We have provided DFID with a list of more than 20 project stakeholders that includes academics, country authorities, and senior staff at the IMF.

6 Outcomes and Impacts

The project's inequality research was included in several Article IV missions this year, and importantly, country authorities in Malawi and Ethiopia have utilized policy scenario results from the inequality model as they consider selected reforms. During the 2015 Article IV mission to Uganda, the IMF team analyzed the quantitative impact of tax policy and administration improvements on inequality, and the team presented analytical work on "Economic Reforms and Broad Based Growth in Ethiopia" at the National Bank of Ethiopia (NBE). The Malawian government is considering reforming its "Farm Input Subsidy Program (FISP)" and has been working with the IMF team. As part of the recent Article IV consultation in Malawi IMF staff presented on "Macroeconomic and Distributional Implications of FISP Reform in Malawi" to the Ministry of Finance and the donor community.

The IMF/DFID project's unique tight synthesis of policy research, training and technical assistance has helped build capacity in LIC central banks. One example from this year is Ghana. As noted above, the IMF and AFRITAC West2 organized a three-week technical assistance mission to assist the Bank of Ghana (BOG) with strengthening its monetary policy formulation process. The team focused on i) reorganizing BOG structure to support the policy formulation process; ii) enhancing monetary policy deliberations by adjusting the process leading to policy decisions and increasing the extent of interactions between the staff and the Monetary Policy Committee; and iii) further strengthening the quality and sustainability of the staff's forecasting and analytical capacity.

Another example of our coordination with LIC central banks is Uganda, where staff from the IMF and the Bank of Uganda have been involved in a joint research project on monetary policy. The project explores the link between monetary policy and bank lending during the period 2010-2014 using a large micro-level data set from the Ugandan credit register, and the team produced a working paper. Our monetary policy work in Tanzania resulted in a two-week joint IMF-AFRITAC East customized training mission to further refine the FPAS, while in Ghana, a joint IMF-AFRITAC West2 TA mission worked to strengthen the monetary policy formulation process.

We continue to see demand for our work on public investment from IMF country teams. To address this and to add to the sustainability of the work, we developed a toolkit this year. The debt, investment, and growth toolkit provides a user-friendly Excel-based interface thereby eliminating the need for prior Matlab programming knowledge. With the toolkit, a user provides a country-specific calibration, specifies exogenous shocks, and chooses customized plots and variables to be exported back to Excel. To familiarize IMF staff with the features of the toolkit, we developed a course for staff; moreover, we have offered the course to country officials in Tanzania.

As in previous years, the project's outputs have gained attention in the media. As noted earlier, our research on monetary policy issues in low-income countries was a core component of the IMF policy paper "Evolving Monetary Policy Frameworks in Low-income and Other Developing Countries." The *IMF Survey* highlights this policy paper in a December 2015 article. An IMFdirect blog in February 2016 featured a story on capital flows in LICs, co-authored by Deputy Managing Director Min Zhu and Andrea Presbitero. There have also been several VoxEU blogs reporting on this year's research outputs: public investment, efficiency, and growth in January 2016 and financing for development in May 2015. The impact of the monetary policy technical assistance missions to Uganda was made clear in an article (*The Independent (Uganda)):*

> "So, what did Bank of Uganda (BoU) do differently this time round to stabilize the shilling and tame inflation during this election period that they didn't do in the previous election? The answer partly lies in the new monetary policy framework that came into place in July 2011 enabling the Central bank to control money supply during the election period without necessarily hurting various ongoing infrastructural developments across the country. Adam Mugume, the director for research at the BoU,

told The Independent that the new monetary policy had enabled them to incorporate anticipated economic developments into monetary policy decision making since it is forward looking. “The outlook involves projections of inflation, exchange rate, current account deficits, fiscal deficits, economic growth, and monetary aggregates,” Mugume said. The new monetary policy involved a shift from monetary to inflationary targeting in which it sets a monthly Central Bank Rate (CBR) to guide the seven-day interbank interest rates, enabling the economy and money circulation to cope with innovations, developments, and trends in the financial sector. Mugume said the monetary framework used before then was backward-looking and could not incorporate the expected developments - both domestic and external - into monetary policy decision making. A backward-looking monetary policy looks at past information set, that is, past and current inflation and growth, money supply and private sector credit. For instance, based on this framework, BoU was able to start tightening monetary policy in April 2015, even when inflation was still 1.9%.”

7 Costs, Value for Money, and Management

The approved budget for the first four years of this project is US$10.3 million.

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 March 2016, US$9,149,434 has been drawn down from the subaccount. These figures vary from those in Table 4 below as the IMF financial systems lag behind actual expenses, to enable the requisite verification of expenses before they are charged to donor subaccounts.

The following table provides an indicative breakdown of planned versus actual spending over four years of the project:

Table 4
Project Expenditures in Years 1-4

		Realized Expenditures				
	Approved Budget	Year 1	Year 2	Year 3	Year 4	Total
Contractuals	$4,608,668	$637,714	$894,169	$702,251	$1,562,325	$3,796,459
Visiting Scholars	$2,093,242	$382,379	$475,306	$629,159	$893,040	$2,379,884
Travel and Conferences	$1,369,055	$214,972	$415,794	$33,022	$325,057	$988,845
Contingency	$150,000	$0	$0		$0	$0
IMF Staff	$1,594,743	$472,256	$363,231	$295,221	$474,162	$1,604,870
IMF Staff Backstopping/Uptake	$1,464,287	$409,732	$322,961	$280,217	$245,231	$1,258,141
Project Management	$130,455	$45,185	$40,270	$15,003	$52,527	$152,985
Subtotal	$9,665,708	$1,707,321	$2,148,500	$1,659,653	$3,254,584	$8,770,058
TTF Management Fee (7%)	$676,600	$119,512	$150,395	$116,176	$227,821	$613,904
TOTAL	$10,342,308	$1,826,834	$2,298,894	$1,775,828	$3,482,405	$9,383,961

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

Value for Money:

We believe that this project is highly cost effective for several reasons. We strictly follow all Fund guidelines for hiring, travel, and conferences. All contractual hires undergo a competitive process. Outputs are produced under firm timeframes and must meet Fund requirements for publication. The quality of our papers is further evaluated when the papers are submitted to peer-reviewed publications. To date, we have 21 total publications: four in the *Oxford Handbook of Africa and Economics*, seven in a special issue of the *Pacific Economic Review*, and 10 in peer-reviewed journals. Table 5 compares the share of working papers published as peer-reviewed papers produced under the DFID project to the share of all IMF LIC-focused working papers published as peer-reviewed papers from 2012-2015. In each year, the share of DFID papers published is higher than the share of the IMF papers published, which speaks to the quality of the team's work.

Table 5
DFID and IMF Working Papers and Published Papers

	DFID-sponsored WPs			Other LIC WPs		
		Of which published			Of which published	
	Number	Number	Share	Number	Number	Share
2012	6	2	33%	32	3	9%
2013	16	3	19%	29	4	14%
2014	8	2	25%	31	0	0%
2015	16	3	19%	33	2	6%
Total	**46**	**10**	**22%**	**125**	**9**	**7%**

Direct project management costs represented less than two percent of our total budget; if we include the Trust Fund management fee, program management costs were still below nine percent. This means that the vast majority of the funds available to this project were spent on producing high quality research.

8 Work Plan and Timetable

In the coming year, we will continue our work on the main areas of research as well as continue to expand our research capacity. The following provides a brief overview of our plans for each topic.

1) On Monetary and exchange rate policies in LICs, IMF staff:
   a. Are working on in-depth analyses of monetary policy in Kenya, Uganda, Rwanda, Tanzania, Ghana, Mozambique, and recently also in Sri Lanka.
   b. Will continue providing intensive training of the staff of central banks of Kenya, Uganda, Tanzania, Rwanda, Ghana, Mozambique, and Sri Lanka in macroeconomic modelling, forecasting and policy analysis, and assisting the central banks in improving their monetary policy formulation and communication processes.
   c. Will engage in supporting regional FPAS working group for the EAC Partner States, which has been established to deepen the technical cooperation between the central banks of Kenya, Uganda, Rwanda, Tanzania, and Burundi, and share experiences and challenges regarding the implementation of FPAS.
   d. Are planning a scoping mission to the Reserve Bank of Malawi (RBM) to diagnose its current forecasting and policy formulation process and design a work plan to enhance the RBM forecasting and policy analysis system.
   e. Are working on the research paper on traditional money targeting in practice.

2) Debt sustainability analysis and management of natural resources
   a. Professor Paul Levine (University of Surrey), in collaboration with IMF staff, will complete a working paper that studies how to spend optimally on infrastructure, while taking into consideration key characteristics of developing countries such as inefficiencies in public investment and tax collection as well as high returns to public capital, among others.
   b. Professor Ioana Moldovan (University of Glasgow), in collaboration with IMF staff, will continue and complete work on a paper on optimal and implementable fiscal and reserve accumulation policy rules in the context of volatile aid.
   c. Professor Ed Buffie (Indiana University) is working with IMF staff on the implications of public-private partnerships for public investment, growth, and debt sustainability in LICs.
   d. IMF staff will make the DIG toolkit publically available.
   e. IMF staff and Professor Ed Buffie (Indiana University) will produce a paper that describes the Ethiopia version of the DIG model. The model incorporates investment in an energy sector, besides investment in infrastructure, and a banking sector.
   f. IMF staff will produce an analytical paper on some misconceptions about public investment efficiency and growth.
   g. IMF staff in collaboration with Ondra Kamenik (OGR) will complete work on incorporating uncertainty about parameters (e.g. efficiency of public investment) and external shock shocks (e.g. price of oil) into the DIG model.
   h. Country applications of the DIG, DIGNAR, and current account models will include Lesotho, Republic of Congo, CEMAC, and Mongolia.

3) Macroeconomic policies and income distribution:
   a. IMF staff plan to organize a third workshop/or possibly a larger conference on macroeconomic policy and income inequality in LICs. Sections of the conference can follow the structure of the successful first and second workshops, bringing leading scholars and policy makers to the IMF to present and discuss their work on the subject. This workshop will therefore further expand the network of people involved and interested in macroeconomic and distributional analysis of LICs. Papers produced by our teams will be featured in the workshop.

b. IMF staff are working with the Bolivia country team to adapt the framework developed in our previous papers to study the macroeconomic and distributional impact of the recent commodity prices boom and bust.
c. In a similar manner as above, we will work with the Republic of Congo country team to study the macroeconomic and distributional impact of the recent commodity prices boom and bust on the fiscal envelope of the country. Possible policy responses to the shock and their distributional and macro implications will also be considered.
d. We are working together Honduras country team to adapt the framework developed in our previous papers to study the impact of a VAT reform, possible adjustments to price controls, and VAT rebates to intermediate goods.
e. The applications to Bolivia, Republic of Congo, and Honduras will be part of the IMF's Article IV consultations. One of the members of our team will participate in the mission and present the results to authorities and key stakeholders, including development partners.
f. We plan to expand the team and hire Professor Xican Xi from Fudan University to work on a new project on the macro and distributional implications of climate change policy. We also plan to hire Vinzenz Ziesem as our summer RA to support country applications.
g. We plan to submit our paper Revenue Mobilization in Developing Countries to a journal such as the *AEJ Macro*.
h. We plan to teach a class to IMF staff on the MDAM model and develop a toolkit that could be used by country teams.
i. The team will collaborate on the working paper (possibly SDN) "Understanding Inequality in Developing Countries." The paper will discuss inequality in LIDCs, with the objective of understanding how features that characterize these countries can affect inequality levels, and given these features how policies should be designed differently in LIDCs. Key questions: (1) What is the incidence of income inequality in LIDCs, and how does it compare to higher-income economies? Are inequality levels correlated with certain economic characteristics that are more pervasive at lower levels of income (for example, higher share of agriculture, level of informality or extent of economic diversification)? Is inequality correlated with specific reforms?; (2) Have key pro-growth policies and structural reforms been inclusive in LIDCs? Are the tradeoffs, if any, between growth and inequality macro-relevant?; (3) What policy options/structural reforms targeted towards improving economic growth prospects can also help make growth more inclusive?

4) Growth through diversification:
   a. To address the requests from IMF mission teams and country authorities, we will continue work in extending the export diversification and quality upgrading through 2014; in addition we will incorporate an index on export services.
   b. We plan to use updated data to write one or two new working papers possibly joint with outside experts.
   c. We will present diversification toolkit and working papers at top conferences and universities.

5) Capital Flows:
   a. The goal of the project is to better understand new developments in private capital flows in LICs and contribute to the policy debate on potential risks associated with gaining market access by frontier LICs.
   b. The capital flows toolkit, which includes the non-FDI capital flows dataset (Araujo et al., 2015) and the capital controls dataset (Jahan and Wang), is in its final stage and set to release this year.
   c. "Non-FDI Capital Inflows in Low-Income Developing Countries: Catching the Wave?" is due for publication in the *IMF Economic Review.*

d. “Evolution of Bilateral Capital Flows to Developing Countries at Intensive and Extensive Margins” has been sent for publication at *Journal of Money, Credit & Banking.*
e. “Joining the Club? Procyclicality of Private Capital Inflows in Low Income Developing Countries” has been sent for publication at *Journal of International Money and Finance*

6) Gender and Macroeconomics:
   a. Work continues on developing the first comprehensive assessment of gender budgeting initiatives around the world, and the team is wrapping up six working papers that highlight the regional experiences of gender budgeting.
   b. We are also developing a toolkit to provide outside researchers with a dataset on global gender budgeting efforts. The toolkit will also offer researchers the ability to compare a country’s performance on gender inequality indicators to other similar (e.g. in terms of income, region, gender budgeting status, etc.) countries’ performance.
   c. The gender budgeting research may be incorporated into an upcoming UN high level panel report on gender inequality.
   d. We will be offering a course to IMF staff on gender budgeting through the IMF’s Institute for Capacity Development in July, 2016.
   e. Staff have provided IMF country teams (Morocco and Rwanda) with preliminary information on gender budgeting in these two countries and will continue to coordinate with country teams this year.
   f. We plan to host a conference on gender budgeting at the IMF in the fall of 2016. We anticipate participation of IMF management.
   g. Other ongoing work includes looking at the relationship between gender inequality and human capital, and quantifying the extent to which restrictions to women’s economic rights impede economic diversification. The work on diversification will be included in an IMF book on gender to be released in summer 2016.
   h. We plan to host a two-day conference on gender and macroeconomic issues in early 2017. The conference would bring together academics and senior policy makers to discuss research issues related to women and macroeconomic growth and stability, with a particular focus on LICs.
   i. Team members will continue to contribute to the IMF Knowledge Exchange website on Gender by providing datasets and reading suggestions and remain involved in the IMF Managing Director’s advisory group on gender.

9 Risk

The overall risk for this project remains low.

10 Monitoring and Evaluation

Monitoring:

IMF reports to DFID annually regarding the outputs included in the logframe. In addition to this formal reporting requirement, we provide quarterly updates to our website so that DFID and the general public have up-to-date information on our research and progress. The team sends out quarterly e-newsletters that reach an audience of more than 1000 academics, policymakers, central bank staff, and government representatives, among others. These e-newsletters are posted on the project website. We also upload all publically available working and published papers to the R4D portal on the DFID website so that DFID staff members will be able to easily search and retrieve all of our outputs. To further ensure public access to all outputs produced through the grant, we will provide "gold access" to journal publications. When deemed necessary by IMF and DFID 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.

Annex 2: Logframe

IMPACT	Impact Indicator 1		Baseline	Milestone 1	Target (date)	
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**	2015	2016	2017	
		Achieved				
			Source			
	Impact Indicator 2		**Baseline**	**Milestone 1**	**Target (date)**	
	Increase in employment to population ratio in LICs	**Planned**	2015	2016	2017	
		Achieved				
			Source			
OUTCOME	**Outcome Indicator 0**		**Baseline**	**Milestone 1**	**Target (date)**	**Assumptions**
Deeper understanding of, and better engagement by, IMF policymakers on LIC-specific macroeconomic issues, leading to improved policymaking in specific thematic areas.	Improved IMF policymaking and integration of LIC-specifics in project thematic areas.	**Planned**	Six thematic areas influenced by March 2015. H (6) M (4) L (3)	By March 2016: H (7) M (5) L (3)	Eight thematic areas influenced by March 2017. H (8) M (6) L (5)	
		Achieved	5	5		
			Source			
			IMF			
INPUTS (£)	**£5,470,000**					
INPUTS (HR)	**DFID (FTEs)**					

OUTPUT 1	Output Indicator 1.1		Baseline	Milestone 1	Target (date)	Assumptions
High quality, policy relevant research on macroeconomic issues affecting LICs produced.	Number of priority research papers produced on topics: 1) Monetary policy and macro stabilization 2) Debt sustainability and natural resource mgmt 3) Inequality and macroeconomics 4) Growth and structural change 5) Capital Flows 6) Gender	**Planned**	36 priority papers produced by March 2015. H (36 papers) M (24 papers) L (12 papers)	By March 2016: H (52) M (45) L (40)	68 working papers produced by March 2017: H (68) M (58) L (48)	1) No further escalation of the economic crisis, in the eurozone or elsewhere, such that IMF staff can devote time to the project as committed. 2) IMF are able to identify high-quality 3) Academic researchers are able to deliver contracted inputs consistent with timeframes envisaged for the project. 4) Counterpart inputs materialise as anticipated.
		Achieved	40	56		
		Source				
		IMF				
	Output Indicator 1.2		**Baseline**	**Milestone 1**	**Target (date)**	
	Number of research papers accepted for publication in top journals	**Planned**	Six papers published by March 2015. H (6) M (3) L (1)	By March 2016: H (9) M (4) L (3)	17 papers published by March 2017. H (17) M (11) L (8)	
		Achieved	16	24		
	Output Indicator 1.3		**Baseline**	**Milestone 1**	**Target (date)**	
	Number of freely available books published.	**Planned**	N/A	By March 2016: H (0) M (0) L (0)	Two books published by March 2017. H (2) M (1) L (0)	
		Achieved	0	0		
		Source				
		IMF				
IMPACT WEIGHTING						
30%						
INPUTS (£)	**DFID (£)**		**Govt (£)**	**Other (£)**	**DFID SHARE**	
INPUTS (HR)	**DFID (FTEs)**					

OUTPUT 2	Output Indicator 2.1		Baseline	Milestone 1	Target (date)	Assumptions
IMF research products (policy analysis, practical and operational tools and frameworks) produced under this project used by IMF country teams and partner authorities.	Application and use of tools and frameworks by country teams.	**Planned**	Application by 18 country teams by March 2015. H (18) M (10) L (6)	By March 2016, evidence of number of country teams applying policy tools and frameworks: H (26) M (14) L (8)	38 applications by IMF country teams by March 2017. H (38) M (25) L (16)	
		Achieved	34	48		
		Source				
		IMF				
	Output Indicator 2.2		**Baseline**	**Milestone 1**	**Target (date)**	
	Application and use of tools and frameworks by country authorities.	**Planned**	Application by six country authorities by March 2015. H (6) M (4) L (3)	By March 2016, evidence of number of country authorities applying policy tools and frameworks: H (8) M (5) L (4)	Application by 11 country authorities by March 2017. H (11) M (8) L (6)	
		Achieved	7	9		
		Source				
		IMF				
IMPACT WEIGHTING						
30%						
INPUTS (£)	**DFID (£)**		**Govt (£)**	**Other (£)**	**DFID SHARE (%)**	
INPUTS (HR)	**DFID (FTEs)**					

OUTPUT 3	Output Indicator 3.1		Baseline	Milestone 1	Target (date)	Assumptions
IMF strengthens engagement by senior IMF policymakers macroeconomic on issues affecting LICs	High level policy conferences attended by senior IMF staff reflect findings of research papers funded under this project.	**Planned**	Research findings reflected in six high-level conferences by March 2015. H (6) M (4) L (3)	By March 2016, policy conferences drawing on outputs from the project: H (8) M (6) L (4)	Research findings reflected in 11 high-level conferences by March 2017. H (11) M (9) L (6)	
		Achieved	12	13		
	Output Indicator 3.2		**Baseline**	**Milestone 1**	**Target (date)**	
	Results of the research papers produced reflected in IMF Board discussions, IMF policy papers such as Staff Discussion Notes, policy memos to management, and the like.	**Planned**	Seven IMF Board/SDN/etc. papers using research findings by March 2015. H (7) M (4) L (3)	By March 2016, evidence of research in number of IMF Board/SDN/etc. papers: H (8) M (4) L (3)	11 IMF Board/SDN/etc. papers using research findings by March 2017. H (11) M (6) L (4)	
		Achieved	11	13		
	Output Indicator 3.2.1	**Planned**	**Baseline**	**Milestone 1**	**Target (date)**	
	Results of the research papers produced reflected in IMF Board papers.		Five IMF Board papers using research findings by March 2015. H (5) M (4) L (3)	By March 2016, evidence of research in to number of IMF Board Papers H (6) M (4) L (3)	Seven IMF Board papers using research findings by March 2017. H (7) M (5) L (4)	
		Achieved	8	9		
IMPACT WEIGHTING						
25%						
INPUTS (£)	**DFID (£)**		**Govt (£)**	**Other (£)**	**DFID SHARE (**	

INPUTS (HR)	DFID (FTEs)					
OUTPUT 4	Output Indicator 4.1		Baseline	Milestone 1	Target (date)	Assumptions
IMF strengthens capacity building by expanding the network of LIC researchers who are new to the field of macroeconomic research on LICs.	Number of commissioned research papers produced on thematic areas.	Planned	Eight commissioned research papers by March 2015. H (8) M (6) L (4)	By March 2016, number of commissioned papers: H (16) M (10) L (6)	20 commissioned research papers produced by March 2017. H (20) M (18) L (10)	
		Achieved	13	13		
	Output Indicator 4.1.1		Baseline	Milestone 1	Target (date)	
	Toolkits offering publically available datasets to encourage further uptake of work and expand network of researchers	Planned	N/A	By March 2016, toolkits produced: H (2) M (1) L (0)	Three toolkits produced by March 2017. H (3) M (2) L (1)	
		Achieved	1	2		
		Source				
		IMF				
	Output Indicator 4.2		Baseline	Milestone 1	Target (date)	
	Attendance of number of external researchers at high-level policy conferences.	Planned	Attendance at six conferences by March 2015. H (6) M (4) L (3)	By March 2016, number of conferences: H (8) M (6) L (4)	Attendance at 11 high-level conferences by March 2017. H (11) M (9) L (6)	
		Achieved	16	31		
	Output Indicator 4.3		Baseline	Milestone 1	Target (date)	
	Outputs and project disseminated in e-newsletter and updated public webpage (number of updates of e-newsletter and/or webpage)		By March 2015, number of updates: H (10) M (6) L (5)	By March 2016, number of updates: H (14) M (8) L (6)	By March 2017, 18 updates: H (18) M (14) L (10)	
		Achieved	10	14		

IMPACT WEIGHTING					
15%					

Annex 3: Research Outputs

1.1 Working Papers

1. Taylor Visits Africa
   Carlos Eduardo Goncalves

   Summary: Many low-income countries do not use interest rates as their main monetary policy instrument. In East Africa, for instance, targeting money aggregates has been pretty much the rule rather than the exception. Nevertheless, these targets are seldom met and often readjusted according to the economic environment. This opens up the possibility that central banks are de facto pursuing a strategy more akin to a Taylor Rule. Estimations of small-scale models for Kenya, Uganda and Tanzania suggest that these self-styled "monetary targeters" are respecting the Taylor Principle, that is are on average increasing nominal interest rates more than proportionally to inflation. Nevertheless, steep deviations from the Taylor Rule have taken place in Kenya and Tanzania. In Uganda, these errors are much smaller, in fact similar in size to Taylor Rule deviations found for Brazil. More surprisingly, they are smaller than South Africa's, the continent's sole long-term inflation targeter.

2. Monetary Policy in a Developing Country: Loan Applications and Real Effects
   Charles Abuka, Ronnie K. Alinda, Camelia Minoiu, José-Luis Peydró, and Andrea F. Presbitero

   Summary: The transmission of monetary policy to credit aggregates and the real economy can be impaired by weaknesses in the contracting environment, shallow financial markets, and a concentrated banking system. We empirically assess the bank lending channel in Uganda during 2010–2014 using a supervisory dataset of loan applications and granted loans. Our analysis focuses on a short period during which the policy rate rose by 1,000 basis points and then came down by 1,200 basis points. We find that an increase in interest rates reduces the supply of bank credit both on the extensive and intensive margins, and there is significant pass-through to retail lending rates. We document a strong bank balance sheet channel, as the lending behavior of banks with high capital and liquidity is different from that of banks with low capital and liquidity. Finally, we show the impact of monetary policy on real activity across districts depends on banking sector conditions. Overall, our results indicate significant real effects of the bank lending channel in developing countries.

3. Implications of Food Subsistence for Monetary Policy and Inflation
   Rafael Portillo, Luis-Felipe Zanna, Stephen O'Connell, and Richard Peck

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

4. Inflation Targeting and Exchange Rate Management in Less Developed Countries
   Marco Airaudo, Edward F. Buffie, and Luis-Felipe Zanna

Summary: We analyze coordination of monetary and exchange rate policy in a two-sector model of a small open economy featuring imperfect substitution between domestic and foreign financial assets. Our central finding is that management of the exchange rate greatly enhances the efficacy of inflation targeting. In a flexible exchange rate system, inflation targeting incurs a high risk of indeterminacy where macroeconomic fluctuations can be driven by self-fulfilling expectations. Moreover, small inflation shocks may escalate into much larger increases in inflation ex post. Both problems disappear when the central bank leans heavily against the wind in a managed float.

5. [Aid and Growth at the Regional Level]
   Axel Dreher and Steffen Lohmann

Summary: This paper brings the aid effectiveness debate to the sub-national level. We hypothesize the nonrobust results regarding the effects of aid on development in the previous literature to arise due to the effects of aid being insufficiently large to measurably affect aggregate outcomes. Using geocoded data for World Bank aid to a maximum of 2,221 first-level administrative regions (ADM1) and 54,167 second-level administrative regions (ADM2) in 130 countries over the 2000-2011 period, we test whether aid affects development, measured as nighttime light growth. Our preferred identification strategy exploits variation arising from interacting a variable that indicates whether or not a country has passed the threshold for receiving IDA's concessional aid with a recipient region's probability to receive aid, in a sample of 478 ADM1 regions and almost 8,400 ADM2 regions from 21 countries. Controlling for the levels of the interacted variables, the interaction provides a powerful and excludable instrument. Overall, we find significant correlations between aid and growth in ADM2 regions, but no causal effects.

6. [Public Investment in a Developing Country Facing Resource Depletion]
   Adrian Alter, Matteo F. Ghilardi and Dalia S. Hakura

Summary: This paper analyzes the tradeoffs between savings, debt and public investment in the Republic of Congo, a developing country with looming oil exhaustibility concerns. Our results highlight the risks to fiscal and capital sustainability of oil exporting countries from large scaling-up in public investment and oil price volatility in view of a projected decline in the oil revenue to GDP ratio. However, structural reforms that improve the efficiency of public investment can allow for a relatively faster buildup of sustainable public capital and sustain higher non-oil growth without adversely affecting the debt ratio or savings. Moreover, we show that even if a government pursues prudent fiscal policy that preserves resource wealth and debt sustainability in the face of exhaustible and volatile resource revenues, low public investment quality in the form of a misallocation of resources can hinder attainment of sustainable public capital and positive non-oil growth.

7. [Some Misconceptions about Public Investment Efficiency and Growth]
   Andrew Berg, Edward F. Buffie, Catherine Pattillo, Rafael Portillo, Andrea Presbitero, and Luis-Felipe Zanna

Summary: We reconsider the macroeconomic implications of public investment efficiency, defined as the ratio between the actual increment to public capital and the amount spent. We show that, in a simple and standard model, increases in public investment spending in inefficient countries do not have a lower impact on growth than in efficient countries, a result confirmed in a simple cross-country regression. This apparently counter-intuitive result, which contrasts with Pritchett (2000) and recent policy analyses, follows directly from the standard assumption that the marginal product of public capital declines with the capital/output ratio. The implication is that efficiency and scarcity of public capital are likely to be inversely related across countries. It follows that both efficiency and the rate of return need to be considered together in assessing the impact of

increases in investment, and blanket recommendations against increased public investment spending in inefficient countries need to be reconsidered. Changes in efficiency, in contrast, have direct and potentially powerful impacts on growth: "investing in investing" through structural reforms that increase efficiency, for example, can have very high rates of return.

8. [International Sovereign Bonds by Emerging Markets and Developing Economies: Drivers of Issuance and Spreads]
Andrea F. Presbitero, Dhaneshwar Ghura, Olumuyiwa S. Adedeji, and Lamin Njie

Summary: What determines the ability of low-income developing countries to issue bonds in international capital and what explains the spreads on these bonds? This paper examines these questions using a dataset that includes emerging markets and developing economies (EMDEs) that issued sovereign bonds at least once during the period 1995-2013 as well as those that did not. We find that an EMDE is more likely to issue a bond when, in comparison with non-issuing peers, it is larger in economic size, has higher per capita GDP, and has stronger macroeconomic fundamentals and government. Spreads on sovereign bonds are lower for countries with strong external and fiscal positions, as well as robust economic growth and government effectiveness. With regard to global factors, the results show that sovereign bond spreads are reduced in periods of lower market volatility.

9. [From Natural Resource Boom to Sustainable Economic Growth: Lessons for Mongolia]
Pranav Gupta, Bin Grace Li, and Jiangyan Yu

Summary: Some resource-rich developing countries are in the process of harnessing immense mining resources towards inclusive growth and prosperity. Nevertheless, tapping into natural resources could be challenging given the large front-loaded investment, volatile capital flows and exposure to global commodity markets. Public investment is needed to remove the often-large infrastructure gap and unlock the economic potential. However, too rapid fiscal outlays could push the economy to its limit of absorptive capacity and increase macro-financial vulnerabilities. This paper utilizes a structural model-based approach to analyze macroeconomic impacts of different public investment strategies on key fiscal and non-fiscal variables such as debt, consumption, sovereign wealth fund, and real exchange rates. We apply the model to Mongolia and draw policy recommendations from the analysis. We find that fiscal policy adjustment, particularly moderating infrastructure investment and optimizing investment efficiency is needed to maintain macroeconomic and external stability, as well as to boost the long-term sustainable growth for Mongolia.

10. [Natural Resource Booms in the Modern Era: Is the curse still alive?]
Andrew Warner

Summary: The global boom in hydrocarbon, metal and mineral prices since the year 2000 created huge economic rents - rents which, once invested, were widely expected to promote productivity growth in other parts of the booming economies, creating a lasting legacy of the boom years. This paper asks whether this has happened. To properly address this question the empirical strategy must look behind the veil of the booming sector because that, by definition, will boom in a boom. So the paper considers new data on GDP per person outside of the resource sector. Despite having vast sums to invest, GDP growth per-capita outside of the booming sectors appears on average to have been no faster during the boom years than before. The paper finds no country in which (non-resource) growth per-person has been statistically significantly higher during the boom years. In some Gulf states, oil rents have financed a migration-facilitated economic expansion with small or negative productivity gains. Overall, there is little evidence the booms have left behind the anticipated productivity transformation in the domestic economies. It appears that current policies are, overall, proving insufficient to spur lasting development outside resource intensive sectors.

11. [Government Spending Effects in Low-Income Countries]
Wenyi Shen, Shu-Chun S. Yang, and Luis-Felipe Zanna

Summary: Despite the voluminous literature on fiscal policy, very few papers focus on low-income countries (LICs). This paper develops a new-Keynesian small open economy model to show, analytically and through simulations, that some of the prevalent features of LICs—different types of financing including aid, the marginal efficiency of public investment, and the degree of home bias—play a key role in determining the effects of fiscal policy and related multipliers in these countries. External financing like aid increases the resource envelope of the economy, mitigating the private sector crowding out effects of government spending and pushing up the output multiplier. The same external financing, however, tends to appreciate the real exchange rate and as a result, traded output can respond quite negatively, reducing the overall output multiplier. Although capital scarcity implies high returns to public capital in LICs, declines in public investment efficiency can substantially dampen the output multiplier. Since LICs often import substantial amounts of goods, public investment may not be as effective in stimulating domestic production in the short run.

12. [Macroeconomic Dimensions of Public-Private Partnerships]
Edward F. Buffie, Michele Andreolli, Bin Grace Li, and Luis-Felipe Zanna

Summary: The voluminous literature comparing public-private partnerships (P3s) and own-investment (OI) by the public sector is dominated by contributions from microeconomic theory. This paper gives macroeconomics a voice in the debate by investigating the repercussions of P3 vs. OI in a dynamic general equilibrium model featuring private capital accumulation and involuntary unemployment with efficiency wages. Typically P3s cost more but produce higher-quality infrastructure and boast a better on-time completion record than OI; consequently, they are comparatively more effective in reducing underinvestment in private capital, underinvestment in infrastructure, unemployment and poverty. The asymmetric impact on macro externalities raises the social return in the P3 2 - 9 percentage points relative to the social return to OI, depending on whether the externalities operate singly or in combination and on whether P3 enjoys an advantage in speed of construction.

13. [Non-FDI Capital Inflows in Low-Income Developing Countries: Catching the Wave?]
Juliana D. Araujo, Antonio C. David, Carlos van Hombeeck, and Chris Papageorgiou

Summary: Low-income countries (LIDCs) are typically characterized by intermittent and very modest access to private external funding sources. Motivated by recent developments in private flows to LIDCs this paper makes two contributions: First, it constructs a new comprehensive dataset on gross private capital flows with special focus on non-FDI flows in LIDCs. Concentrating on LIDCs and more specifically on gross non-FDI private flows is intentionally aimed at closing a gap in existing datasets where country coverage of developing economies is limited mainly to emerging markets (EMs). Second, using the new data, it identifies several shifting patterns of gross non-FDI private inflows to LIDCs. A surprising fact emerges: since the mid 2000's periods of surges in gross non-FDI private inflows in LIDCs are broadly comparable to those of EMs. Moreover, while gross non-FDI inflows to LIDCs are on average much lower than those to EMs, we show that the LIDC top quartile gross non-FDI inflow is comparable to the EM median inflow and converging to the EM top quartile inflow.

14. [Joining the Club? Procyclicality of Private Capital Inflows in Low Income Developing Countries]
Juliana D. Araujo, Antonio C. David, Carlos van Hombeeck, and Chris Papageorgiou

Summary: Using a newly developed dataset this paper examines the cyclicality of private capital inflows to low-income developing countries (LIDCs) over the period 1990-2012. The empirical analysis shows that capital inflows to LIDCs are procyclical, yet considerably less procyclical than flows to more advanced economies. The analysis also suggests that flows to LIDCs are more persistent than flows to emerging markets (EMs). There is also evidence that changes in risk aversion are a significant correlate of private capital inflows with the expected sign, but LIDCs seem to be less sensitive to changes in global risk aversion than EMs. A host of robustness checks to alternative estimation methods, samples, and control variables confirm the baseline results. In terms of policy implications, these findings suggest that private capital inflows are likely to become more procyclical as LIDCs move along the development path, which could in turn raise several associated policy challenges, not the least concerning the reform of traditional monetary policy frameworks.

15. The Role of Productivity, Transportation Costs, and Barriers to Intersectoral Mobility in Structural Transformation
Cem Karayalcin and Mihaela Pintea

Summary: The process of economic development is characterized by substantial reallocations of resources across sectors. In this paper, we construct a multi-sector model in which there are barriers to the movement of labor from low-productivity traditional agriculture to modern sectors. With the barrier in place, we show that improvements in productivity in modern sectors (including agriculture) or reductions in transportation costs may lead to a rise in agricultural employment and through terms-of-trade effects may harm subsistence farmers if the traditional subsistence sector is larger than a critical level. This suggests that policy advice based on the earlier literature needs to be revised. Reducing barriers to mobility (through reductions in the cost of skill acquisition and institutional changes) and improving the productivity of subsistence farmers needs to precede policies designed to increase the productivity of modern sectors or decrease transportation costs.

16. Trends in Gender Equality and Women's Advancement
Janet G. Stotsky, Sakina Shibuya, Lisa Kolovich, and Suhaib Kebhaj

Summary: This paper examines trends in indicators of gender equality and women's development, using evidence derived from individual indicators and gender equality indices. We extend both the United Nations Development Program's Gender Development Index and Gender Inequality Index to examine time trends. In recent decades, the world has moved closer to gender equality and narrowed gaps in education, health, and economic and political opportunity; however, substantial differences remain, especially in South Asia, the Middle East, and sub-Saharan Africa. The results suggest countries can make meaningful improvements in gender equality, even while significant income differences between countries remain.

1.2 Published Papers

1. Current account norms in natural resource rich and capital scarce economies
   Juliana D. Araujo , Bin Grace Li , Marcos Poplawski-Ribeiro , Luis-Felipe Zanna
2. Too much and too fast? Public investment scaling-up and absorptive capacity
   Andrea Presbitero
3. Public debt and growth: Heterogeneity and non-linearity
   Markus Eberhardta and Andrea Presbitero
4. Debt Sustainability, Public Investment, and Natural Resources in Developing Countries: The DIGNAR Model
   Giovanni Melina, Susan Yang, and Felipe Zanna
5. Monetary Policy Issues in Sub-Saharan Africa
   Andrew Berg, Stephen O'Connell, Catherine Pattillo, Rafael Portillo, and Filiz Unsal
6. Aid and domestic resource mobilization with a focus on Sub-Saharan Africa

Oliver Morrissey

7. [On measuring loan concessionality in Official Development Assistance]
   Daniel Roodman
8. [Aid and growth at the regional level]
   Axel Dreher and Steffen Lohmann

2.1 Uptake by IMF Teams

Monetary Policy

Tanzania

The IMF and AFRITAC East organized a two-week Customized Training (CT) mission to the Bank of Tanzania (BoT) in Dar es Salaam during November-December, 2015. The mission assisted the BoT in further refining its Forecasting and Policy Analysis System (FPAS) as an integral part of strengthening BoT's monetary policy formulation process. The mission focused in particular on upgrading the BoT's macroeconomic modeling toolkit to allow for better analysis of the fiscal policies. The mission also assisted the BoT staff in constructing a new baseline forecast and helped open a detailed discussion about the way the BoT manages its liquidity operations in order to get the definition of reserve money in the model consistent with the BoT framework

Kenya

During the 2015 AFR program mission to Kenya, the IMF team adopted a simple New-Keynesian quarterly projection model (QPM) to analyze monetary policy based on a medium-term inflation outlook. Policy discussions on the inflation outlook focused on the relative weights of demand and supply factors. The IMF staff argued that inflation risks would remain elevated in the near term, reflecting a combination of continued demand pressures from a 2015/16 fiscal impulse and supply shocks from rising non-food non-fuel inflation. The Central Bank of Kenya (CBK) staff, however, saw a recent pickup in inflation as reflecting mostly temporary supply shocks which would subside in the second half of 2016. Notwithstanding some differences in the assessment of the near-term inflation outlook, the CBK and the staff agreed on the importance of gradually re-aligning the interbank interest rate with the policy rate to achieve the inflation objective.

Ghana

The IMF and AFRITAC West2 organized a three-week technical assistance (TA) mission to Accra, Ghana. The mission assisted the Bank of Ghana (BOG) with strengthening its monetary policy formulation process. The mission followed up on the February, 2015 scoping TA mission, which assessed the BOG's policy formulation and communication in the context of the inflation targeting (IT) regime. The current mission focused on the following IT regime pillars: i) reorganizing BOG structure to support the policy formulation process; ii) enhancing monetary policy deliberations by adjusting the process leading to policy decisions and increasing the extent of interactions between the staff and the Monetary Policy Committee; and iii) further strengthening the quality and sustainability of the staff's forecasting and analytical capacity.

Uganda

IMF staff visited Kampala during May, 2015 as part of a joint IMF-Bank of Uganda (BOU) research project on monetary policy. The project explores the link between monetary policy and bank lending during the period 2010-2014 using a large micro-level data set from the Ugandan credit register. The project also investigates how the response of credit supply to changes in the monetary policy stance is influenced by banking sector conditions, and distinguishes between bank loans denominated in local and foreign currencies. This collaboration offers a unique opportunity to undertake the first analysis of the bank lending channel in a sub-Saharan economy based entirely on micro data.

Public investment, growth, and debt sustainability

Maldives: Selected Issues

In light of an ambitious 4-year plan for scaling up of public investment, Maldives' Article IV consultations focused on issues of effective management of infrastructure scale up to maximize growth and limit challenges to debt sustainability. Adapting the model to Maldives recognized its heavy dependence on tourism—the main beneficiary of the proposed infrastructure projects—and uncertainty about its future return due to the technical complexity to expand Male International Airport and the need for supporting actions by the private sector—investments in resorts and transportation. Staff discussed the analytic results with the authorities. The baseline model suggests a sustained increase in growth triggered by a successful implementation of the scaling up accompanied by a gradual rise in private investment, private capital and consumption over the medium term. The model also implies a substantial increase in tax rates and/or cuts in public transfers to contain public deficits, which clearly illustrates the pressure on public finances and policy options posed by the scaling up projects. Moreover, in case of poor project management that results in lower return, public investment would not add much to growth but would rather drive fiscal deficit and debt levels further away from the rules under the Fiscal Responsibility Act.

Lesotho

IMF staff wrote a dynamic general equilibrium model to analyze the impact on public debt and growth of a public investment in an electricity exporting dam and applied it to a potential project in Lesotho. The results were published in the 2015 Article IV report.

DIG Toolkit

The DIG toolkit provides a user-friendly Excel-based interface for simulating policy scenarios analyzing the macroeconomic consequences of public investment scaling up. Without the need for prior Matlab programming knowledge, the user provides a country-specific calibration, specifies exogenous shocks, and chooses customized plots and variables to be exported back to Excel. The toolkit was used to teach an ICD course for IMF staff in January 2016 and in a training course in Tanzania for country officials in the region in March 2016. It will be made openly available online.

Macroeconomic Management of Natural Resources:

Botswana

IMF staff visited Gaborone in December 2015 for the annual Article IV Consultation meetings. The discussions focused on policies to counteract the recent economic slowdown and on reforms and investments needed to foster sustainable growth. As part of the analysis, staff applied the DIGNAR model of Melina et al. (2014) to assess the potential macroeconomic effects of a scaling-up of public investment. The model was calibrated to reflect features of Botswana and different scaling-up scenarios were considered. The model simulations highlighted the importance of complementing the scaling-up process with reforms that improve the quality and the efficiency of public investment, thus strengthening the economic impact of public investment. The results of the analysis are included in a Box and an Appendix in the Staff Report.

DIGNAR Model Toolkit

The toolkit provides a user-friendly Excel-based interface for simulating policy scenarios with the DIGNAR model. It comprises an 'input' spreadsheet where the user provides the country-specific calibration and selects necessary options to simulate desired scenarios and produce plots in a customized way. The toolkit also saves the simulation outcomes in an 'output' spreadsheet. It assumes no knowledge of Matlab programming skills.

Current Account Norm

CEMAC: 2015 Article IV Consultation

IMF staff applied the Current Account model developed by Araujo et al. (2013) to CEMAC in 2015. The model seeks to determine the optimal current account for an energy exporting developing country with a dynamic general equilibrium model. IMF staff helped the respective IMF country team with handling the model and the results were published in the 2015 Article IV report.

Congo: 2015 Article IV Consultation

IMF staff applied the current account model developed by Araujo et al. (2013) to Congo in 2015. The model seeks to determine the optimal current account for an energy exporting developing group of countries with a dynamic general equilibrium model. IMF staff helped the respective IMF country teams with handling the model and the results were published in the 2015 Article IV reports.

Gabon: 2015 Article IV Consultation

Staff applied the current account model developed by Araujo et al. (2013) and solved for a current account norm based on a small open economy model with private and public investment and several frictions such as absorptive capacity constraints, inefficiencies in investment, and borrowing constraints. Results from this methodology suggest an overvaluation of 3.4 and 7.2 percent under percent under cost overrun assumptions of 60 and 40 percent respectively. Higher absorptive capacity constraints are associated with higher current account benchmarks as it is optimal to reduce the pace of investment.

Ecuador: Selected Issues Paper

The IMF published in October 2015 a Selected Issues paper on Ecuador, which benefitted from RES contribution. Staff applied the current account model developed by Araujo et al. (2013) to analyze the impact of an oil price reduction on the current account balance of Ecuador.

Inequality

Fiscal Policy and Inequality in Uganda

During the 2015 Article IV mission to Uganda, the IMF team analyzed the quantitative impact of tax policy and administration improvements on inequality, applying a model of heterogeneous households and fiscal policy and held a workshop with staff of the Uganda Revenue Authority. The analysis shows that increasing value-added tax revenues would have a limited, adverse impact on equality while effectively raising revenues, and highlights the importance of taking into account the high level of informality in the Ugandan economy and changing incentives of economic agents in designing fiscal policy measures.

2.2 Uptake by Authorities

- Ethiopia
- The IMF has begun work on pilot initiatives on inequality, gender, and climate issues to strengthen its surveillance engagement with member countries. Ethiopia is one of the pilot countries for inequality issues. During a recent Article IV mission to Ethiopia, the IMF-DFID team presented analytical work on "Economic Reforms and Broad Based Growth in Ethiopia" at the National Bank of Ethiopia (NBE) and discussed the macroeconomic and distributional implications of a set of reforms aimed at improving revenue mobilization, efficiency, and broad based growth using a dynamic general equilibrium model tailored to Ethiopia. While in Ethiopia, the team studied the macroeconomic and distributional impact of two policies that Fund staff have recommended to increase domestic resource mobilization: (i) streamlining tax incentives, and (ii) reforming

Development Bank of Ethiopia funding modality. Main result shows that the proposed reforms generate macroeconomic growth, 0.5% increase in GDP per year, and it is mostly due to higher investment in manufacturing. Although these reforms generate higher growth, the distributional cost in terms of inequality and poverty are high. Therefore to sustain inclusive growth, policy makers should consider complementary policies that can alleviate the negative impact of structural reform. Therefore, the team proposes three inclusive growth policies: (i) cash transfers (expansion of the PSNP), (ii) rural-urban migration, and (iii) financial sector deepening.

- Malawi
- The government of Malawi is considering reforming its "Farm Input Subsidy Program (FISP)" with the objective of generating fiscal space and improving the efficiency of expenditure. As part of the recent Article IV consultation in Malawi IMF staff presented the analytical work developed by SPR, RES, and AFR, on "Macroeconomic and Distributional Implications of FISP Reform in Malawi." The results suggest that the trade-off in the payoffs between efficiency and equity with the proposed reform can be ameliorated with compensatory measures. The analysis was presented to the authorities at the Ministry of Finance, and to the donor community. The results generated intense debate. The Minister of Finance asked for a private meeting that included the Alternate Executive Director, Mr. Mkwezalamba, the IMF resident representative, and the team. He also requested further engagement, possibly in the form of a technical assistance mission in the near future.

3.1 High-level Policy Conferences

Conference on Financing for Development

A conference focusing on the post-2015 development agenda was held at the Graduate Institute of International and Development Studies in Geneva, Switzerland, on April 15–17, 2015. Co-sponsored by the IMF, DFID, the Graduate Institute, and the Center for Finance and Development, the conference brought together academics and policy makers to discuss innovative strategies aimed at catalyzing domestic and external financing from the official and private sectors. A selection of papers was published in a special issue of the *Oxford Review of Economic Policy*.

3.2 Results of Papers Reflected in IMF Board Discussions and/or Policy Papers

IMF Board Papers:

Evolving Monetary Policy Frameworks in Low-Income and Other Developing Countries

Over the past three years, the IMF-DFID team has done extensive research on monetary policy issues in low-income countries. These efforts have significantly contributed to a new IMF policy paper, Evolving Monetary Policy Frameworks in Low-income and Other Developing Countries, which examines how LICs can adopt forward-looking frameworks that better anchor inflation and promote stability and growth. The paper highlights the team's technical assistance efforts with central banks in sub-Saharan Africa; for example, in coordination with the staff from the IMF-DFID team, the Central Bank of Kenya developed a forward-looking policy recommendation process underpinned by model based forecasts and made changes to its organizational structure. The team also worked with the Uganda, Ghana, and Rwanda country teams and central banks to prepare medium-term inflation projections and analyze economic conditions to assess the appropriateness of the monetary policy stance, and plans to continue working to institutionalize this initiative in a range of other countries.

Staff Discussion Note:

From Ambition to Execution: Policies in Support of Sustainable Development Goals

This SDN examines three areas of key relevance for achieving the sustainable development goals. It addresses economic transformation and inclusiveness priorities for developing countries, and environmental sustainability priorities for both developing and high-income countries. It emphasizes synergies between economic, social, and environmental objectives while also analyzing trade-offs and policies to minimize them. Although there is no one-size-fits-all strategy, some common threads can be identified, which can help countries—supported by the international community—to implement their development agenda of sustainable growth, inclusive growth, and environmental sustainability.

4.1.1 - Toolkits

DIGNAR Model Toolkit

The toolkit provides a user-friendly Excel-based interface for simulating policy scenarios with the DIGNAR model. It comprises an 'input' spreadsheet where the user provides the country-specific calibration and selects necessary options to simulate desired scenarios and produce plots in a customized way. The toolkit also saves the simulation outcomes in an 'output' spreadsheet. It assumes no knowledge of Matlab programming skills.

4.2 Attendance of External Researchers at High-level Policy Conferences

Prakash Loungani presented the DIGNAR model, with simulations produced by Felipe Zanna, Ioana Moldovan, and Giovanni Melina for frontier economies:

1. The Global Public Debt Outlook, Brookings Institution, March 2016

Chris Papageorgiou presented his work on *Export Quality in Advanced and Developing Economies: Evidence from a New Dataset* at three events:

2. World Bank Conference on Diversification, Mexico City, January 2016
3. AEA Meetings, San Francisco, January 2016
4. University of Cincinnati, October 2015

Chris also presented Economic Diversification in Low-Income Countries at:

5. SEA Meetings, New Orleans, November 2015
6. Growth-Macro Workshop, Nice France, June 2015

Marina Tavares and Adrian Peralta presented their paper, *The Distributional Implications of Fiscal Consolidation in Developing Countries*, at four institutions below:

7. Instituto Tecnológico Autónomo de México
8. Warsaw International Economic Meeting
9. The Northeast Universities Development Consortium Conference
10. Federal Reserve Bank of St. Louis

Grace Li presented IMF working paper, From Natural Resource Boom to Sustainable Economic Growth: Lessons for Mongolia:

11. Singapore Economic Review Conference 2015

Grace also presented VAR meets DSGE: Uncovering the Monetary Transmission Mechanism in Low-Income countries:

12. Oxford seminar series

Filiz Unsal organized a session at the American Economic Association Annual Meeting in San Francisco titled "Macroprudential Policies for Low-Income and Developing Countries", and presented two papers.

13. Credit Booms and Macro-Prudential Policies in Low Income Countries
14. Macroprudential Policies in Low-Income Countries

Lisa Kolovich presented the team's work on gender budgeting at:

15. Europe Gender Summit (Berlin, November 2015)

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.

1. May 2015 Newsletter
2. August 2015 Newsletter
3. November 2015 Newsletter
4. February 2016 Newsletter