



# LIBERIA

## SELECTED ISSUES

September 2022

This paper on Liberia was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on August 8, 2022.

Copies of this report are available to the public from

International Monetary Fund • Publication Services  
PO Box 92780 • Washington, D.C. 20090  
Telephone: (202) 623-7430 • Fax: (202) 623-7201  
E-mail: [publications@imf.org](mailto:publications@imf.org) Web: <http://www.imf.org>  
Price: \$18.00 per printed copy

**International Monetary Fund**  
**Washington, D.C.**



# LIBERIA

## SELECTED ISSUES

August 8, 2022

Approved By  
The African Department

Prepared By Saanya Jain, Akito Matsumoto, Thabang Ernest Molise, and Daniel Jenya.

## CONTENTS

<b>DEALING WITH CLIMATE CHANGE IN LIBERIA</b>	<b>3</b>
A. Climate Change in Liberia	3
B. The Impact of Climate Change in Liberia	4
C. The Climate Change Institutions of Liberia	6
D. Liberia’s Climate Policy	7
E. Liberia’s Mitigation Policy	8
F. Liberia’s Adaptation Strategy	9
G. Climate Change Policy Priorities	11
H. International Support for Liberia’s Adaptation Efforts	12
I. Conclusions	13
<b>FIGURES</b>	
1. Annual Average Temperatures Under Different Global Scenarios, 1900-2100	3
2. ND-GAIN Score	4
<b>TABLES</b>	
1. ND-GAIN Index for Liberia	5
2. Costs of Action Plan for the Implementation of Strategic Interventions	7
3. The Most Highly Prioritized Projects	9
4. Barriers for Climate Action	10
References	14
<b>MONETARY POLICY AND DE-DOLLARIZATION IN LIBERIA’S DUAL CURRENCY SYSTEM</b>	<b>15</b>
A. Introduction and Background	15
B. Enhancing Liberia’s Monetary Policy Framework	17

C. Implementing Monetary Policy Under Reserve Money Operating Targeting Framework	24
D. Promoting De-dollarization in Liberia	25
E. Conclusions	28

**BOX**

1. Cross-country Experience with De-dollarization	28
---	----

**FIGURES**

1. Monetization, Financial Intermediation, and Dollarization Indicators	17
2. Impulse Responses of Inflation (CPI) to a One S.D. Innovations in the Exchange Rate (ER) and Money Aggregates Across Four Different VAR Models	22

**TABLES**

1. Correlation Results	20
2. VAR Granger Causality Test Results	20

**APPENDIX**

I. Operational Guideline for Implementing Monetary Policy Under Reserve Money Operating Targeting Framework	32
References	30

**LIBERIA'S GROWTH POTENTIAL AND HOW TO GET THERE** 34

A. Liberia's Economic Growth Record	34
B. Sources of Growth	35
C. Policies to Spur Growth	37
D. Conclusions	45

**BOX**

1. Timelines for the Southern Corridor Road Asset Management Project	41
--	----

**FIGURES**

1. Education Spending and Outcomes	38
2. Infrastructure and Public Investment	40
3. Commercial Bank Credit and Financial Inclusion	44

**TABLES**

1. Growth Accounting: Annualized GDP Growth and Its Components	36
2. Potential Growth and Its Drivers	45
References	46

# DEALING WITH CLIMATE CHANGE IN LIBERIA<sup>1</sup>

**1. Climate change is a global challenge that increasingly puts lives, livelihoods, and economies in jeopardy the world over.** According to the Intergovernmental Panel on Climate Change, average global temperatures are likely to rise and then stabilize at 1.8°C above preindustrial levels by mid-century even in the relatively optimistic “Shared Socio-economic Pathway (SSP) 1–2.6 scenario.”<sup>2</sup> The scenario assumes that carbon emissions are reduced to zero in the second half of this century, which requires efforts beyond current policy commitments. The frequency of extreme weather events is bound to increase, and sea levels will likely rise by 30–60 cm, though the projections are subject to considerable uncertainties. A global mitigation effort to contain emissions is underway and countries are putting adaptation measures in place to better deal with the looming effects of climate change.

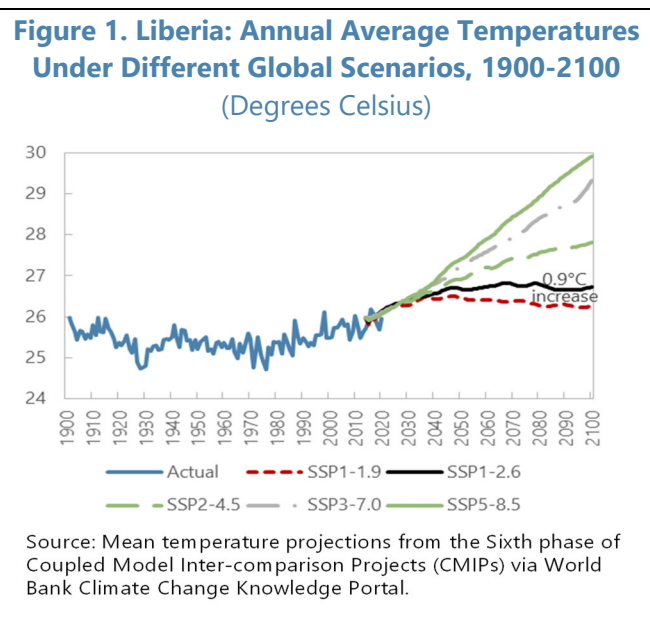
**2. This paper discusses climate change, climate change impact, and climate change policies for the case of Liberia.** The impacts of climate change are not uniform around the globe and a given climate shock affects countries differently, with low-income economies like Liberia typically suffering more. Accordingly, policy responses also need to be tailored. Liberia has already established an institutional infrastructure to deal with climate change, made mitigation commitments, and drawn up adaptation plans. This paper takes stock, identifies policy priorities, and discusses what more the international community could do to support Liberia’s efforts.

## A. Climate Change in Liberia

**3. The change in Liberia’s climate will be multidimensional.** Climate change is not only about rising temperatures. Global warming also entails changes in precipitation patterns, in the frequency of extreme weather events, and in sea levels. Climate change scenarios at the country level are subject to even larger uncertainties than projections for global averages.

**4. Temperatures in Liberia are likely to rise somewhat more than global averages**

(Figure 1). Warming in the 20<sup>th</sup> century was less pronounced in Liberia than in the world at large through the 1970s. Since then, temperatures rose in parallel by about 0.7°C, to reach an average of



<sup>1</sup>Prepared by Saanya Jain and Akito Matsumoto.

<sup>2</sup>Projections are based on the global climate model compilations of the Coupled Model Inter-Comparison Projects (CMIPs). Details are available at [the World Bank Climate Change Knowledge Portal](https://climateknowledgeportal.worldbank.org/).

25.8°C in Liberia. In the SSP 1–2.6 scenario, temperatures are projected to edge up another 0.9°C to an average of 26.7°C through 2080–2100, which is more than the expected 0.6°C global increase over the same period. In less optimistic scenarios, Liberia’s average temperature could push as high as 30°C. In a tropical country, further warming could be more pernicious than in more moderate climate zones and push Liberia to the edge of habitability.

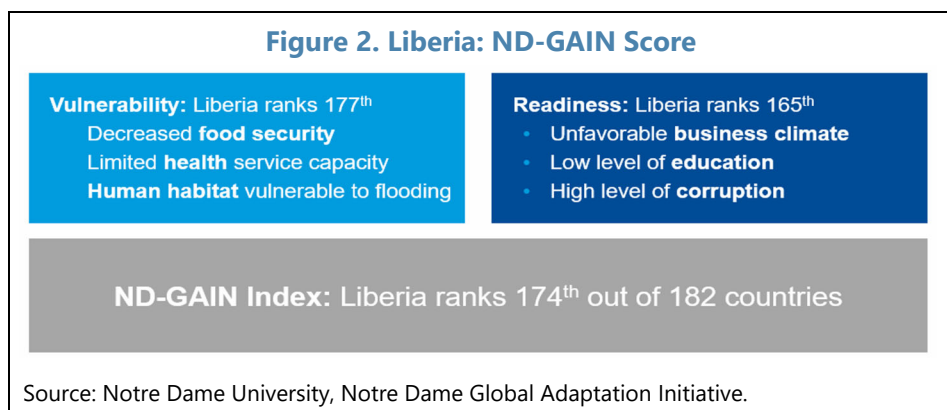
**5. Extreme weather events, such as heavy rain and flooding, could take a heavy toll.**

Liberia is one of the world’s wettest countries. Mean annual precipitation during 1991–2020 came to 2,467 mm, about three times the amount in the U.S. or France. The expected changes in average precipitation may not be all that large, but the likely higher frequency of heavy rains and flooding could be devastating. Although Liberia as a whole is unlikely to suffer from water shortages, some regions could still be hit by local droughts.

**6. Sea level rise is an imminent threat to Liberia.** While the rise of sea levels is pretty uniform around the world, Liberia is highly exposed with 560 km of coastline that spans the entire length of the country and with the world’s 8<sup>th</sup> largest percentage of population living in low elevation coastal zones. Already over the past decade, 800 homes have been swallowed by the sea and 6,500 people have been displaced in the West Point township of the capital, Monrovia.

## B. The Impact of Climate Change in Liberia

**7. Climate change is expected to hit Liberia hard because of its high vulnerabilities and low readiness levels.**<sup>3</sup> The [ND-GAIN Country Index](#) compiled by the University of Notre Dame’s Global



Adaptation Initiative (2022) uses 20 years of data across 45 indicators to rank 182 countries annually based on their level of vulnerability and their readiness to successfully implement adaptation measures. According to the index, Liberia ranks 174<sup>th</sup> overall—177<sup>th</sup> in terms of vulnerability, i.e., one of the most vulnerable countries, and 165<sup>th</sup> in terms of readiness, i.e., one of the least ready countries (Figure 2). Given the size of its impact, climate change will profoundly affect the Liberian society and the country’s macroeconomic performance.

**8. Liberia is vulnerable along multiple dimensions.** The ND-GAIN index scores sectors on a scale of 0 to 1. Health, human habitat, and food stand out as most vulnerable (Table 1).

<sup>3</sup>See more on this at [World Bank Climate Risk Country Profile](#) and [National Adaptation Plan \(NAP\) 2020-2030](#).

**9. The health sector already faces many challenges and will be further stressed by the consequences of climate change.**<sup>4</sup> Many medical professionals left the country during the civil war and the dependency on external resources for health services remains high. Most people are not covered by medical insurance. Overall immunization rates are low despite the high prevalence of tropical diseases. With more frequent heavy rains and poor sanitation systems, vector-borne diseases will likely spread further.

**Table 1. Liberia: ND-GAIN Index for Liberia**

Vulnerability	0.605
Health	0.755
Human Habitat	0.686
Food	0.633
Ecosystem Services	0.554
Water	0.399
Infrastructure	-
Higher the number, higher the vulnerability.	

**10. Given that agriculture is the largest sector of the economy, any climate change-related setbacks will significantly affect living standards and poverty.**

Agriculture comprises roughly one third of the economy and accounts for around 40 percent of employment. At 51 percent in 2021, poverty rates in Liberia are already amongst the highest in Sub-Saharan Africa (SSA). According to the Food and Agricultural Organization (FAO) and others (2021), prevalence of undernourishment in the total population is the fourth highest in Africa. Widespread subsistence farming and high dependency on food imports make Liberia one of the least food secure countries in the world. Rice, Liberia's primary staple food, is at present mostly imported and as such at risk from climate change in the main exporting countries. The nascent domestic production will face headwinds from local climate change.

**11. Productivity in the agriculture sector is already very low and could decrease further with climate change.** The impact will be most felt through the projected increase in the frequency of extreme weather events on harvests because of underdeveloped infrastructure, especially in irrigation and weather forecasting. In addition to the direct impact on crops, climate change can affect the agriculture sector indirectly via more frequent and severe pests and weed resistance. Without proper control measures, productivity is bound to suffer.

**12. Many exported agricultural goods, such as cocoa and rubber, are important for the Liberian economy but they are also sensitive to climate change.** Export earnings are crucial to financing the imports on which Liberia depends. Cocoa and rubber accounted for 3.5 percent and 11.5 percent of Liberia's export earnings in 2020, respectively. For cocoa, shifts away from optimal temperatures and rain patterns decrease the yield and affect taste as well. For rubber, erratic weather conditions tend to raise production and maintenance costs on plantations.

**13. Likely changes in the oceanic ecosystem will put further pressure on food security and household income.** Liberia's fishery sector is an important contributor to food security and livelihoods of coastal, as well as inland communities. Two thirds of the animal protein intake in Liberia comes from fish. Higher temperatures tend to reduce fish populations and increase contamination by bacteria.

<sup>4</sup>Liberia's Second National Communication to UNFCCC also details health risks in the context of climate change (Liberia, 2021a).

**14. Liberia enjoys one of the largest water resources in the region, but climate change could compromise the quality and regional distribution of water.** It is positive that currently 70 percent of the population has access to improved water sources. But there are considerable regional disparities that could worsen as climate change intensifies. Generally good water quality could be lost when more frequent and increasingly heavy rains overwhelm Liberia's deficient sanitation systems and spread vector-borne diseases.

**15. The rise in sea levels is another major concern for Liberia with its coastal areas home to almost 60 percent of its population and most of its economic activity.** Coastal flooding and beach erosion, which are already manifesting, will only become worse. Population displacement will become more acute and prospects for a tourism industry will be damaged. In the Greater Monrovia area alone, the expected sea-level rise of 16 cm by 2030 will put 675,000 people (one eighth of the country's population) and 9,500 ha of land at risk, according to the World Bank's 2021 Climate Risk Assessment. Despite these risks, coastal lowlands continue to attract settlers and are growing rapidly in population.

**16. The impact of climate change in Liberia is large not only because of high vulnerabilities, but also because of a low level of readiness to address the challenges they pose.** Recent political stability and progress in reducing social inequality pushed Liberia's readiness ranking in the ND-GAIN index slightly above the vulnerability ranking, but it remains near the bottom. This is mostly due to an unfavorable business climate, low levels of education, and pervasive corruption.<sup>5</sup> For example, new business density and expected years of schooling in Liberia are one of the lowest in the world ([World Bank, 2020](#)). Some 90 percent of Liberian people think that corruption is high according to the Center for Transparency and Accountability in Liberia.

### C. The Climate Change Institutions of Liberia

**17. The National Climate Change Steering Committee (NCCSC) is the supreme institutional body responsible for coordinating and supervising the implementation of climate change policy and other related activities in Liberia.** It was established in 2010 and is chaired by the office of the President of the Republic of Liberia, or his/her designate, and supported by the National Climate Change Secretariat (NCCS) housed in the [Environment Protection Agency \(EPA\)](#). Due to funding and capacity challenges, the NCCSC and NCCS were hardly operational in their first four years. They were invigorated in 2014 with the start of the implementation of the [National Adaptation Programme of Action \(NAPA\)](#), (Liberia 2008).

**18. The EPA is Liberia's Designated National Authority under the United Nations Framework Convention on Climate Change (UNFCCC).** As the national regulatory agency, it has the mandate for sustainable environmental management, including climate change. The Minister of Finance and Development Planning (MFDP) chairs EPA's Board. To achieve its statutory mandate and other obligations, the EPA collaborates with several key entities, such as the MFDP, the Forestry Development Authority, the Ministry of Agriculture, the National Disaster Management Agency, the Ministry of Mines and Energy, and the Ministry of Internal Affairs. This collaboration includes policies

<sup>5</sup>See Selected Issues Paper: Liberia's Growth Potential and How to Get There.

to deliver on Liberia's commitment under the Paris Agreement and the development of Liberia's Nationally Determined Contribution (NDC).

## D. Liberia's Climate Policy

**19. The National Policy and Response Strategy on Climate Change (NPRSCC) of 2018 is a comprehensive document that covers both mitigation and adaptation policies.** It is based on 27 existing national policy and strategy documents, including [the initial NDC](#) (Liberia 2015) and the Liberia National Vision 2030. It follows best international practices and draws on climate policies and strategies developed by other countries, such as Ghana, Namibia, and Rwanda.

**20. The Action Plan for the implementation of NPRSCC is costed at US\$2 billion** (Table 2). Even though Liberia is a low emitter of greenhouse gases (GHG) and in urgent need of adaptation measures to better prepare for the looming fallout from climate change, only US\$700 million are allocated to adaptation, mainly for infrastructure projects and the protection of coastal areas. The majority of funds is earmarked for mitigation measures, which seek to contribute to global emission reduction efforts. They focus on emission containment in transport and preservation of the rain forest.

<b>Category</b>	<b>I. Adaptation</b>	<b>II. Mitigation</b>	<b>III. Cross-cutting</b>	<b>Total</b>
Agriculture	30.1	57.0		87.1
Capacity development and training			58.0	58.0
Coastal areas	162.0			162.0
Communication, education, and awareness			2.1	2.1
Energy	30.1	32.0		62.1
Fishery	8.9			8.9
Forestry and Wildlife	13.0	156.0		169.0
Gender, HIV and AIDS			1.8	1.8
Health	21.5			21.5
Industry	15.4	32.0		47.4
Infrastructure	251.4			251.4
Mining	0.4	6.0		6.4
Research and development			47.0	47.0
Technology transfer			58.4	58.4
Tourism	45.2	20.0		65.2
Transport	53.8	593.0		646.8
Urbanization and settlement	35.0			35.0
Waste management		176.0		176.0
Water Resources	33.3			33.3
<b>Total</b>	<b>700.0</b>	<b>1072.0</b>	<b>167.3</b>	<b>1939.2</b>

Sources: National Policy and Response Strategy on Climate Change (NPRSCC) and IMF staff calculations.



## E. Liberia's Mitigation Policy

**21. Liberia is a net carbon sink, emitting less GHG than it absorbs.** In 2018, Liberia's per capita CO<sub>2</sub> emissions came to 0.27 metric ton (mt), compared to 0.76 mt in SSA, 6.42 mt in the European Union (EU), and 15.24 mt in the U.S. Total emissions ran at 1,320 kt, corresponding to just 0.0039 percent of global emissions and equivalent to the emissions of 87,000 U.S. residents. On the other hand, Liberia contains the largest portion of the Upper Guinea Rainforest, despite substantial forest loss over the years. This dense forest cover was estimated to absorb 96,811 kt of CO<sub>2</sub> per year in [the Initial National Communication](#) (INC), (Liberia 2013) and the 2015 NDC. Even though further economic development will make Liberia a slightly larger GHG emitter, it is still expected to remain a net carbon sink as long as deforestation is prevented.

**22. Even though it already is a net carbon sink, Liberia has committed to further ambitious mitigation efforts.** Mitigation is the effort to contain climate change by absorbing, avoiding, and reducing GHG emissions. In the context of the Paris agreement, Liberia committed in its [revised NDC](#) (Liberia 2021b) to "reducing its economy-wide greenhouse gas emissions by 64% below the projected business-as-usual (BAU) level by 2030, through a combination of the following: unconditional GHG reductions of 10% below BAU, resulting in an absolute emissions level of 11,187Gg CO<sub>2</sub>e in 2030; with an additional 54% reduction conditional upon international support, which would result in an absolute emissions level of 4,537Gg CO<sub>2</sub>e in 2030."

**23. Forest conservation and reforestation have the largest mitigation impact.** Strict implementation, including rigorous enforcement of forest protection laws, are needed to achieve the set goals. These efforts deserve the full support of the international community. Even in the absence of immediate funding, Liberia is well advised to protect its natural resources and preserve its forests, as they could become a substantial source of income once carbon credit markets are developed. Indeed, with funding from the United Kingdom Department for International Development (DFID) and the EU, the Forestry Development Authority started LiberTrace, which reduces illegal logging by monitoring logging activity. To reap these financial benefits, Liberia would also need to establish rigorous verification processes to credibly document its preservation and reforestation achievements.

**24. Containing emissions from energy use is the other leg of Liberia's mitigation commitments under the NDC.** Given Liberia's stage of economic development, improving energy efficiency now and leapfrogging the energy transition, as well as improving waste management, are relatively easy to achieve with international support. This would also reduce import dependence and exposure to swings in international fuel prices. Envisaged steps include moving away from traditional fuels, such as firewood and charcoal, producing palm-oil diesel to scale back the use of petroleum products, expanding and rehabilitating hydro-electric power plants, and improving waste management to mitigate methane emissions.

## F. Liberia's Adaptation Strategy

**25. Liberia's mitigation measures contribute to the global common goal to limit emissions, but this does not make the need to scale up adaptation efforts in Liberia any less urgent.** Adaptation seeks to mitigate the adverse impact of climate change on society and the economy. Liberia will likely be hit hard by climate change, considering its high vulnerabilities and low preparedness levels, unless extensive adaptation measures are put in place quickly. Since the impact from climate change is not uniform, adaptation strategies need to be tailored to countries' particulars and to those of regions within a given country. Developing them requires adequate information on specific risks and vulnerabilities.

**26. Liberia's climate change adaptation policies are guided by a number of strategic documents.** In 2008, Liberia prepared the NAPA, which is the first systematic analysis of national adaptation needs. Two years later, Liberia initiated the National Adaptation Plan (NAP) process to establish a nationally coordinated approach for the medium and long term. It was updated and further developed with the NAP (2020-2030) published in 2022 (Liberia 2022). In November 2021, the Liberia issued its first [Adaptation Communications](#) (AdCom), (Liberia 2021c) to the UNFCCC.

**27. The NAPA outlines Liberia's most urgent and immediate needs for climate change adaptation.** It prioritizes projects across the eight vulnerable sectors (Table 3). The top priority is the Integrated Crop/Livestock Farming project in the agricultural sector, which aims to reduce vulnerabilities of farmers by diversifying crop farming through the cultivation of soybeans, lowland rice, and small ruminants rearing. The duration of the project is set for twenty-four months with estimated costs of US\$5 million. The second highest priority is the project on Improved Monitoring of Climate Change in the meteorological sector, followed by the Coastal Defense System for the Cities of Buchanan and Monrovia project. Implementation of the projects for climate change monitoring and coastal zone defenses began only in the last few years with international support, despite having been proposed as far back in 2008.

**Table 3. Liberia: The Most Highly Prioritized Projects**

Sector	Project
Agriculture	Integrated crop/livestock farming
Forestry and wetlands	Switching from fossil fuel based to biomass-based energy products
Fisheries	Promoting sustainable fishing practices
Energy	Promoting energy efficiency and conservation
Water	Awareness and sensitization about the importance of water resource management
Coastal zones	Development of an integrated coastal zone management plan
Meteorological	Rebuilding the national meteorological monitoring network
Public health	Use of insecticide treated materials

Source: NAPA (Liberia, 2008).

**28. While adaptation plans have been developed, several barriers are hampering their implementation, with limited progress so far.** According to the AdCom, the barriers to turning plans into action are financial, informational, technical, legal, and political (**Error! Reference source not found.**). In particular, a lack of a sense of urgency and political will are particularly concerning.

<b>Barrier Category</b>	<b>Specific Barrier</b>
Financial	High cost of implementation of adaptation plans and projects; Limited access to funding and lack of national budgetary support
Information and Awareness	Limited and inadequate information and awareness in the rural areas of Liberia
Technical	Limited technical expertise and technologies in most of the different adaptation sectors or disciplines
Legal and Regulatory	Limited specific adaptation policies or frameworks for some sectors
Political	Lack of political will

Source: AdCom, (Liberia, 2021c).

**29. The NAP focuses on information accessibility and capacity building, arguably unduly so.** It stresses the importance of initiatives that generate new insights, develop better technologies, improve knowledge management, strengthen access to information, and empower actors. For example, the aim of the adaptation program in the agriculture sector is set out as fostering a secure environment for decision-making by farmers and public policy managers faced with climate uncertainties through efficient access to information, technologies, and production processes so that they can put sustainable production systems in place. While capacity to understand climate change risks is without doubt an important prerequisite, it is high time to move on to making key decisions and taking decisive action.

**30. Notwithstanding these general implementation challenges, few projects have gone forward with the technical and financial support from development partners.** For example, Liberia is one of the first beneficiaries of a grant from the Green Climate Fund (GCF) that supports two projects. The Monrovia Metropolitan Climate Resilience Project was approved in 2021 and is expected to be completed in 2027 by the United Nations Development Programme (UNDP). It aims to enhance the resilience of vulnerable coastal communities to climate-induced sea level rises by constructing coastal defense structures, developing a coastal zone management plan, and supporting livelihood diversification. The Enhancing Climate Information Systems for Resilient Development in Liberia project will promote the establishment of interlinked community and national early warning systems. Both projects address two urgent and immediate needs listed in NAPA, though their rollout started only recently. Separately, the African Development Program (AfDB) approved a grant-financed project in February 2022 with the GCF as the accredited agency.

## G. Climate Change Policy Priorities

**31. To mobilize more resources for dealing with climate change, Liberia should put in place the necessary conditions to unlock additional international financial support.** Climate finance is subject to rigorous transparency and governance standards for recipients, notably under the GCF accreditation process and carbon credit verification procedures. Liberia should consider establishing national entities accredited by the GCF that oversee climate-change projects. GCF accreditation ensures that entities' policies, procedures, track record, and demonstrated capacity to undertake projects or programs of different financial instruments and environmental and social risk categories are in line with the standards of the GCF. With such assurances as to the good use of resources in place, along with general efforts to address widespread corruption, development partners will be more willing to provide additional financing. In the case of Liberia, it would be a priority to credibly demonstrate that forests are preserved, and that reforestation takes place.

**32. Additional resources allocated to deal with climate change should primarily go toward adaptation.** Liberia is and is projected to remain a minimal emitter and a net carbon sink, yet in its plans to deal with climate change more resources are devoted to mitigation than to adaptation. In keeping with its international commitments, Liberia should pursue agreed emission reduction targets with a focus on preserving its rain forest, which is a cost-effective measure and also desirable in terms of protecting biodiversity and developing responsible tourism. More generally, dual-purpose measures are worth prioritizing as they come with little additional costs to fight climate change, such as increasing access to electricity to replace private generators which are not only polluting but also uneconomical. But despite global and national mitigation efforts, climate change is going to come to vulnerable and resource-strapped Liberia. Hence, there is a case for channeling any additional resources that can be mobilized primarily to implement adaptation measures.

**33. It is equally important to adequately prioritize among adaptation measures as the overall resource envelope for adaptation will likely remain tight even after efforts to expand it.** The project list in NAPA is comprehensive, although disaster preparedness measures should probably also be included. But it is also extensive relative to the resources available for implementation. The government should therefore identify priority projects for immediate implementation and put other lower-priority measures on the backburner. Given the already increased frequency of intense weather events, enhancing coastal protection and sanitation systems would seem good candidates for prioritization. This would also align well with the priorities set out in Liberia's national development plan—the Pro-Poor Agenda for Prosperity and Development (PAPD)—which envisages directing a sizable portion of capital spending toward water and sanitation projects.

**34. Climate change considerations should be more widely integrated into sector policies.** The upcoming revision of the PAPD would be an opportunity to do so. This would be particularly meaningful for the agricultural sector, given its importance for livelihoods and its sensitivity to climate change. More emphasis could be put on installing proper irrigation and drainage systems around fields. Upgraded extension services that advise on crop diversification and new varieties, crop yields and resilience, pest control, and likely developments of regional weather patterns in the

face of climate change could make a decisive difference. In public investment, the evaluation of projects should systematically take the climate dimension into account, thereby automatically tilting the public investment program toward climate-conscious investment at little or no extra costs. In the same vein, administrative planning and the enforcement of rules and regulations should pay due attention to climate change issues, for example in zoning, wetland protection, and tackling illegal sand mining that further weakens coastal defenses.

## H. International Support for Liberia's Adaptation Efforts

**35. The international community should further develop carbon markets.** When fully developed and globally applied, an emission trading system would create incentives to cut emissions where it is most efficient. Humanity as a whole would benefit from these efficiency gains, through larger emission containment at lesser costs. In addition, countries like Liberia that are large carbon sinks would benefit from a net resource transfer invested in the country's development including climate change adaptation.

**36. Development partners could support Liberia financially before an emission trading system is set up to recognize its mitigation contribution.** Implementation of a global emission trading system is still some way off, but this should not stop the international community to reward Liberia financially now for demonstrated mitigation contributions. Development partners could take Liberia's role as a net carbon sink into account when they allocate funds earmarked for climate-change related projects or aid more generally across countries. However, receiving favorable treatment would also depend on the strength of verification systems, institutional quality, and the prevalence of corruption.

**37. Development partners should support Liberia through technical assistance to adapt to climate change and to meet the preconditions for unlocking funding from the international community.** For example, the IMF provides technical assistance on Climate Public Investment Management Assessments. It helps authorities reform their public investment management system so that climate change considerations are duly taken into account when putting the public investment program together. Development partners should also help countries make progress with meeting the preconditions to tap into international climate financing. This can be done through technical assistance, targeted projects, or wider reforms in the areas of public financial management, governance, and transparency in the context of arrangements with the IMF or Development Policy Operations of the World Bank.

**38. The IMF can help countries finance measures to deal with climate change with resources from the newly established Resilience and Sustainability Trust (RST).** The RST was approved by the IMF's Executive Board in April 2022 to complement the IMF's existing lending toolkit to help address longer-term structural challenges – including climate change and pandemic preparedness – that entail significant macroeconomic risks and where policy solutions are of a strong global public good nature. The RST will commence lending operations once a critical mass of resources is secured, which is expected for end-2022. As a low-income country, Liberia is eligible to benefit from the long-term loans granted by the RST on favorable terms. It would need to prepare a

package of high-quality policy measures consistent with the purpose of the RST, have a concurrent IMF-supported program in place, and demonstrate that its debt is sustainable.

## I. Conclusions

### **39. Liberia will likely be one of the world's most climate change affected countries.**

Vulnerabilities are high because climate sensitive sectors, such as agriculture and fisheries, provide the livelihoods for almost half of the population and because defenses are poor due to underdeveloped infrastructure, such as weak sanitation systems that are easily overwhelmed leading to flooding and the spread of waterborne diseases. High levels of corruption, an unfavorable business climate, and low educational attainment hamper Liberia's readiness to deal with the challenges to come.

### **40. The government should create the preconditions for attracting more climate finance, put more emphasis on adaptation measures, and better prioritize among adaptation projects.**

Climate change conscious policies can be a powerful pull for international financial support, but to benefit, Liberia needs to do more to comply with the required transparency and governance standards, such as GCF accreditation, carbon credit verification processes, and fighting corruption. Any additional resources should primarily go to adaptation, which is currently allocated less funding than mitigation. To make adaptation more effective, a sharper prioritization of projects would be helpful. Climate-change considerations should also be more systematically taken into account in Liberia's public investment program, the national development program's sectoral policies, and administrative planning, such as zoning.

**41. The international community could better recognize Liberia's contribution to climate change mitigation.** Due to its limited emissions and large rain forest cover, Liberia is a net carbon sink. Once a global emissions trading system is in place, Liberia is likely to benefit from a net transfer of resources. In the interim, the international community could recognize Liberia's contribution when aid budgets are allocated, provided the required assurance by the government are in place. Liberia could also avail itself of the resources from the IMF's RST once it becomes operational. The international community should continue to provide Liberia with technical assistance to build capacity in climate change adaptation and in areas that need strengthening to meet the preconditions for attracting more climate finance.

## References

- Center for Transparency and Accountability Liberia. 2021. State of Corruption Report. <https://www.cental.org.lr/index.php/documents/reports/state-of-corruption-report>
- Food Agriculture Organization, International Fund for Agricultural Development, United Nations International Children's Fund, World Food Programme, and World Health Organization. 2021. "The State of Food Security and Nutrition in the World 2021." <https://doi.org/10.4060/cb4474en>
- Liberia. 2008. "Liberia's National Adaptation Programme of Action (NAPA)." <https://unfccc.int/resource/docs/napa/lbr01.pdf>
- Liberia. 2013. "Liberia's Initial National Communication (INC) to the United Nations Framework Convention on Climate Change (UNFCCC)." <https://unfccc.int/resource/docs/natc/lbrnc1.pdf>
- Liberia. 2015. "Liberia's First Intended Nationally Determined Contributions (initial NDC)." <http://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Liberia%20First/INDC%20Final%20Submission%20Sept%2030%202015%20Liberia.pdf>
- Liberia. 2021a. "Liberia's Second Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC)." <https://unfccc.int/documents/271343>
- Liberia. 2021c. "Liberia's Revised Nationally Determined Contributions (revised NDC)." [https://unfccc.int/sites/default/files/NDC/2022-06/Liberia%27s%20Updated%20NDC\\_RL\\_FINAL%20%28002%29.pdf](https://unfccc.int/sites/default/files/NDC/2022-06/Liberia%27s%20Updated%20NDC_RL_FINAL%20%28002%29.pdf)
- Liberia. 2021b. "Liberia's First Adaptation Communication to the United Nations Framework Convention on Climate Change (UNFCCC) (Adcom)." <https://unfccc.int/documents/397501>
- Liberia. 2022. "Liberia's National Adaptation Plan (NAP 2020-2030)." <https://unfccc.int/documents/424116>
- Organisation for Economic Co-operation and Development (2021). OECD DAC External Development Finance Statistics. <https://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm>
- [University of Notre Dame: Notre Dame Global Adaptation Initiative \(2022\) ND-GAIN Country Index.](https://gain.nd.edu/our-work/country-index/) <https://gain.nd.edu/our-work/country-index/>
- World Bank. 2020. "The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19." <http://hdl.handle.net/10986/34432>
- World Bank (2021) "Liberia Climate Risk Country Profile"
- World Bank. 2021. "Climate Risk Profile: Liberia (2021)." [https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15917-WB\\_Liberia%20Country%20Profile-WEB%20%281%29.pdf](https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15917-WB_Liberia%20Country%20Profile-WEB%20%281%29.pdf)

# MONETARY POLICY AND DE-DOLLARIZATION IN LIBERIA'S DUAL CURRENCY SYSTEM<sup>1</sup>

## A. Introduction and Background

**1. Like many central banks in low-income countries, the Central Bank of Liberia (CBL) is modernizing its monetary policy framework to make its policy more effective in anchoring inflation and promoting macroeconomic stability.** Much progress has already been made, but the modernization process is taking place under quite challenging circumstances. The country is facing a legacy of macroeconomic instability, a shortage of fit Liberian dollar banknotes is only now being addressed, financial markets are shallow, and the economy is highly dollarized.

**2. The authorities have already made significant progress in terms of strengthening the CBL's institutional setup and improving the monetary policy framework and monetary operations.** The passage of the amended and restated CBL Act of 2020 enhanced the institutional and operational independence of the CBL. It sets out price stability as the primary mandate of the CBL and generally disallows providing financing for the budget. The Act also provides for the establishment of the Monetary Policy Committee (MPC), with the main responsibility of formulating monetary and exchange rate policy in Liberia. In 2019, the CBL also initiated the process of modernizing its monetary policy framework – a move toward a more interest rate-based system, featuring a policy rate, an interest rate corridor, and standing credit and deposit facilities. The role of CBL bills was also reviewed, and they have become a key monetary policy instrument since 2019.

**3. The conduct of monetary policy is complicated by Liberia's history of macroeconomic instability, but progress has been made more recently.** When inflation is rampant and the exchange rate depreciates quickly, monetary policy carries little credibility, and the general public is driven to using the U.S. dollar. In 2019, a decline in external assistance coupled with unsustainable fiscal policy, which relied on excessive central bank financing, and an accommodative monetary policy stance resulted in macroeconomic instabilities in Liberia. Both inflation and exchange rate depreciation climbed to 30 percent, while the economy slid into recession. Gross official foreign reserves dropped to 2.2 months of imports. However, the country started regaining macroeconomic stability in the context of the government's reform program, which is supported by the IMF under the Extended Credit Facility (ECF) Arrangement signed in December 2019. Inflation declined sharply from about 30 percent at program inception to 5.5 percent in December 2021, thanks to ending monetary financing of the budget and prudent fiscal and monetary policies. This laid the foundation for better growth from 2020, but the pandemic delayed the takeoff. Liberia's economy is estimated to have expanded by 5.0 percent in 2021 and is projected to grow by 3.7 percent and 4.7 percent in 2022 and 2023, respectively. Despite this welcome progress, it will take some time until macroeconomic stability becomes firmly entrenched in the eyes of the general public.

---

<sup>1</sup>Prepared by Thabang Molise.



**4. Monetary policy has also long been hamstrung by the lack of sufficient usable Liberian dollar banknotes, although this is now being addressed by the ongoing currency changeover.**

This exacerbated dollarization, thereby reducing the component of money that is under the direct control of the central bank and limiting the central bank's ability to contain inflation by tightening domestic monetary conditions. To address this challenge, the authorities are in the process of rolling out the long-awaited currency changeover, which seeks to replace the entire existing stock of banknotes, which are highly worn out, and to meet the growing cash demand of the economy. An emergency order for LD 100 bills has already been received. All other denominations will be introduced in the second half of 2022. This will put an end to the periodic shortages of Liberian dollars, which threatened financial and macroeconomic stability and spurred dollarization.

**5. Low financial market depth is another obstacle for the efficient conduct of monetary policy.**

Liberia's financial sector is small, financial intermediation is limited, and capital markets remain rudimentary (Figure 1). Government securities are issued only occasionally and there is no active secondary market for trading them. Shallow financial markets impair the transmission channels of monetary policy. Thin money markets, especially the interbank market, weaken the transmission of monetary impulse to the banking and financial sector. And the small size of the financial sector weakens the impact of banks' lending conditions on a wider economy, including on aggregate demand, output, and inflation.

**6. Liberia's high degree of dollarization places perhaps the most severe limitations on the effectiveness of monetary policy.**

Liberia operates a dual-currency system where both the Liberian dollar and the U.S. dollar are legal tenders. It is one of the most highly dollarized economies in the world. Over the period 2007-20, deposit and credit dollarization are estimated to have averaged 84 percent and 91 percent, respectively (Figure 1). Dollarization weakens the transmission channels of monetary policy since LD interest rates may not feed through to dollar interest rates or the real exchange rate. The literature suggests that dollarization renders the exchange rate highly volatile and increases exchange rate pass-through to domestic prices.<sup>2</sup> Empirical evidence confirms that the degree of exchange rate pass-through to inflation is high in Liberia (IMF, 2014). Exchange rate movements in the wake of monetary policy decision could also give rise to destabilizing balance sheet effects, especially for banks with currency mismatches. Finally, dollarization constrains the central bank's ability to act as lender of last resort and leads to a loss of seigniorage.

**7. Now that the authorities have made some good progress with reestablishing macroeconomic stability and addressing the shortage of quality currency, the preconditions are falling into place to modernize the monetary policy framework and to initiate the process of de-dollarization.**

The objective of this paper is to offer some suggestions how to move forward on both fronts more concretely, drawing on the literature, cross-country experiences, and technical assistance already provided to Liberia.

---

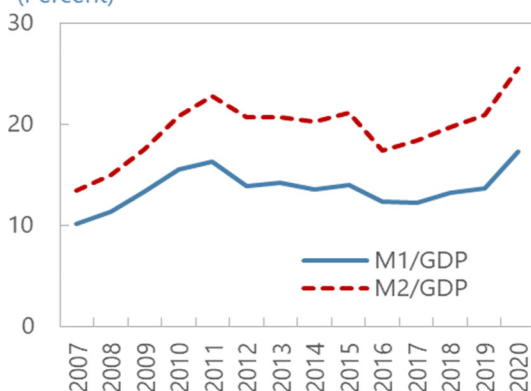
<sup>2</sup>See for example Baliño et al., (1999), Alvarez-Plata and García-Herrero (2008) and Acosta-Ormaechea and Coble (2011).

**8. The paper is structured as follows.** Section B proposes next steps for enhancing Liberia’s monetary policy framework. Section C discusses how best to operationalize monetary policy under the enhanced framework. Section D offers some policy recommendations on promoting de-dollarization in Liberia. Section E concludes.

**Figure 1. Liberia: Monetization, Financial Intermediation, and Dollarization Indicators**

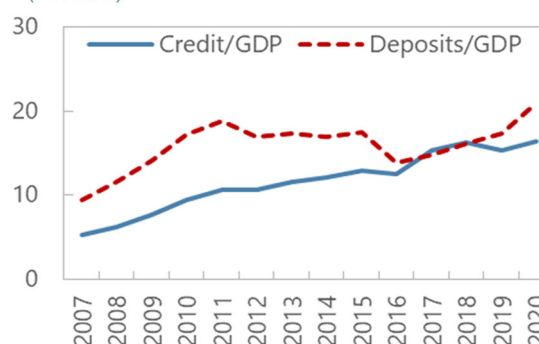
**Liberia: Monetization Indicators, 2007-20**

(Percent)



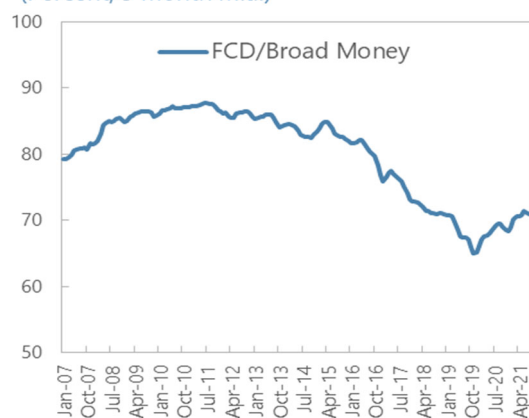
**Liberia: Financial Intermediation Indicators, 2007-20**

(Percent)



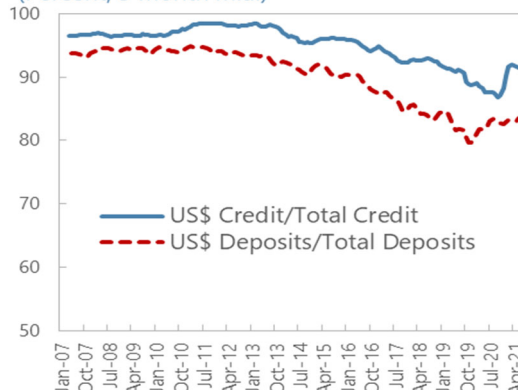
**Liberia: Financial Dollarization, 2007-21**

(Percent, 3 month m.a.)



**Liberia: Deposit and Credit Dollarization, 2007-21**

(Percent, 3 month m.a.)



Sources: IMF staff estimates and calculations.

Notes: FCD: Foreign Currency Deposits. To isolate the impact of valuation changes, deposits and credits in foreign currency are evaluated at a constant exchange rate.

## B. Enhancing Liberia’s Monetary Policy Framework

**9. As Liberia’s monetary policy framework is transiting, some ambiguities have emerged in its current setup.** While the CBL’s primary objective of price stability is clearly articulated, the CBL currently seems to follow both a reserve money and an interest rate operating target, which can create

tensions when the targeted interest rate does not generate the targeted reserve money aggregate.<sup>3</sup> Moreover, the framework seems not to explicitly articulate which variables could serve as intermediate targets or indicator variables to best guide the conduct on monetary policy. Monetary operations, especially the issuance of CBL bills, are not always well calibrated to existing liquidity conditions in the banking sector. CBL bills are issued in fixed amounts and at fixed interest rates, thereby not only limiting the interest rate transmission mechanism, but also price discovery and money market development, which are preconditions for an effective monetary policy transmission mechanism. To illustrate the point, despite a substantial 10-percentage points reduction in the policy rate from 30 percent in 2019 to 20 percent in November 2021, retail rates (deposits and lending rates) in the banking sector remained broadly unchanged. The standing facilities are also underutilized. Indeed, the standing deposit facility (SDF) was abandoned altogether in 2020.

**10. These ambiguities could be resolved by adopting a flexible reserve money targeting framework.**<sup>4</sup> Thereby the CBL would clearly articulate reserve money as a medium-term indicative operating target while at the same time using interest-rate based instruments to conduct monetary policy in the short term and consistent with the monetary policy objective. Setting reserve money target over a medium-term horizon provides some flexibility for reserve money to deviate from the target path in the short term. This flexibility is important because significant seasonality could also complicate the accurate setting of the target, especially if viewed as end-period target. At the same time, allowing some flexibility for reserve money to deviate from the target path in the short term would in turn keep short-term interest rates reasonably stable (Laurens et al., 2015:18). Adopting a flexible reserve money targeting framework would require some adjustment to the conditionality under the current IMF-supported program that sets end-quarter point targets for net domestic assets and net foreign assets of the CBL, which are then internally further broken down into end-month targets.

**11. The flexible reserve money operating target should be implemented within an interest rate corridor system.** The authority could resuscitate the existing interest rate corridor system with its standing deposit and credit facilities. The corridor system would help limit volatility of short-term interest rates, which is critical for anchoring market expectations and reduce liquidity risk. The system allows the market to price liquidity within the interest rate corridor. Laurens et al., (2015) note that the corridor system renders commercial banks' demand for central bank balances less sensitive to interest rates, and thus makes the market less sensitive to liquidity forecasting errors. To keep the market away from the hedges of the corridor (if short-term interest rates are persistently closer to the ceiling or floor) for an extended period, the corridor could be regularly realigned. The repositioning of the corridor would then signal the policy stance. This would serve the same signaling role as changing the policy rate under a

---

<sup>3</sup>In an interest rate operating target, the central bank accommodates banks request for liquidity without any limitation on the quantity. In a reserve money operating target, the central bank decides on the quantity in reference to its reserve money target and let the market decides on the interest rate. See also September 2021 MCM TA Report on Improving Monetary Operations in Liberia.

<sup>4</sup>Flexible reserve money targeting is still relevant in countries with underdeveloped financial markets, with low level of financial intermediation. It provides a tool and a framework to protect the central bank from fiscal dominance or political pressure to meet fiscal objectives (monetary financing) that could lead to a loss of monetary control (Laurens et al., 2015:12).

system where short-term interest rate serve as an operational target and enhance monetary policy communication (Laurens et al., 2015; Maehle, 2020).

**12. To make the interest rate corridor system work effectively, operational procedure for standing facilities should also be streamlined.** In this regard, the CBL could reduce the administrative burden in executing these operations. One possible option being to delegate the approval process of the application for standing facilities to directors' level at the CBL. The CBL should also ensure that these facilities are freely accessible and overnight with no limitation on the quantity, except for the standing credit facility (SCF), where it would be subject to the availability of collateral securities and haircuts. Accessibility of standing facilities will provide incentives for banks to hold limited excess reserves.

**13. In conducting monetary operations, especially CBL bills auctions, the CBL could consider a variable rate tender for the current maturities: two-weeks, 1-month, and 3-months CBL bills.** This would promote price discovery, facilitate correct pricing of liquidity, help build a domestic currency yield curve, and promote money market development. Maehle (2020) notes that the central bank could use flexible-rate fixed-quantity auctions to conduct monetary operations under a flexible monetary targeting framework. This would help the central bank offset the impact of autonomous factors on excess reserves and help keep total reserves consistent with the reserve money target.

**14. Once the operating target has been clarified, intermediate variables or at least some indicator variables that could guide the conduct and monitor the implementation of monetary policy need to be chosen.** In the context of Liberia, it seems appropriate to deemphasize rigid quantitative intermediate targets within the current framework and rather formulate and monitor monetary policy using multiple indicators that could provide useful information about the buildup of inflationary risks. This is not uncommon for central banks with a monetary targeting framework that is still evolving. Laurens et al., (2015) and Barth (2002) point out that central banks seeking to modernize their monetary policy sometimes find it useful to downgrade intermediate target on monetary aggregates to indicator or information variables. Instead of setting intermediate targets on monetary aggregates, central banks use monetary aggregates as indicators that supplement the assessment of short-term risks to price stability. Besides, key relationships upon which intermediate targets on monetary aggregates would be premised, such as predictability of money multipliers and velocity, have recently become relatively unstable in Liberia. There is also uncertainty about money demand, especially due to the ongoing currency changeover, which could influence the degree of dollarization and the general public's willingness to keep money in banks rather than holding cash.

**15. The choice of indicator variables is guided by the degree of their correlation with inflation, their ability to predict inflation, and their timely availability.** To this end, this paper evaluates the suitability of monetary aggregates, with and without foreign currency components, and the exchange rate to predict inflation in Liberia. In line with Berg and Borensztein (2000), the paper examines the relationships between inflation (CPI), the exchange rate (ER) and money in Liberia using a vector autoregression (VAR) analysis, estimated using monthly data for January 2007 to December 2020. The paper considers the following monetary aggregates: currency in circulation (CIC), the monetary base

(MB), narrow money (M1) and broad money (M2). For MB, M1 and M2 the paper also considers the aggregate with and without foreign currency deposits.<sup>5</sup>

**16. The empirical analysis of the relationship between inflation, exchange rate, and money suggests that in Liberia the exchange rate has the greatest predictive power for future inflation and that the domestic-currency component of narrow money and currency in circulation also contain useful information about future inflation.**

- The correlation analysis shows that both the exchange rate, domestic-currency component of narrow money, and currency in circulation are positively and significantly correlated with inflation (Table 1). The correlation is strongest for the exchange rate. The correlation between the other monetary aggregates and inflation is weak and statistically insignificant.

<b>Table 1. Liberia: Correlation Results</b>					
	<b>ER</b>	<b>CIC</b>	<b>MB</b>	<b>M1</b>	<b>M2</b>
<b>CPI</b>	0.6708***	0.1924***	0.0183	0.2222***	0.0984

Notes: CPI: consumer price index; CIC: currency in circulation; MB: monetary base; M1: narrow money; M2: broad money. Asterisks (\*\*\*) denote 1 percent significance. The paper only reports the results of domestic-currency components of monetary aggregates (MB, M1 and M2) for brevity. The results of monetary aggregates that include foreign-currency components suggest that the aggregates that include foreign-currency components are not significantly correlated with inflation.

- However, the results of VAR Granger causality test clarifies that only the exchange rate has a significant Granger effect on the inflation (Table 2).<sup>6</sup> Neither currency in circulation nor monetary aggregates do. As a caveat in interpreting these results it is important to note that the results of the Granger causality test are sensitive to the choice of lag length used in estimating the VAR. In this paper, the Granger causality test was conducted using a VAR with a maximum lag length of 12 months based on Akaike information criterion (AIC).<sup>7</sup>

<b>Table 2. Liberia: VAR Granger Causality Test Results</b>				
	<b>VAR(CPI,CIC,ER)</b>	<b>VAR(CPI,MB,ER)</b>	<b>VAR(CPI,M1,ER)</b>	<b>VAR(CPI,M2,ER)</b>
Money	0.4555	0.1133	0.2696	0.3675
Exchange Rate (ER)	0.0409**	0.0026***	0.0161**	0.0034***

Notes: CPI: consumer price index; CIC: currency in circulation; MB: monetary base; M1: narrow money; M2: broad money. Statistic shown is p-value of hypothesis that no lags of exchange rate and or money variable belong in the price equation. Asterisks (\*\*\*, \*\*, \*) denote 1, 5, and 10 percent significance.

<sup>5</sup>All data are expressed in natural logs and are seasonally adjusted. The lag order of the VAR model is selected based on the Akaike information criterion (AIC).

<sup>6</sup>The intuition behind this test is to establish whether the past values (information) of one variable can help predict the future values of another variable.

<sup>7</sup>To address the shortcoming of the Granger causality test, the paper also performed some additional experiments with longer lag length (e.g., higher than 12 months) and establishes that domestic component of narrow money and currency in circulation also have some predictive power for future inflation.

- The impulse response analysis indicates that shocks to the exchange rate, the domestic-currency component of narrow money, and currency in circulation have significant positive effects on inflation (Figure 2).<sup>8</sup> The shock to the exchange rate has the largest and most persistent effect on inflation. Shocks to the domestic-currency component of narrow money and to currency in circulation have significant effects on inflation, though the effect of the shock on currency in circulation becomes significant only after 13 months. Shocks to other monetary aggregates also have a positive effect on inflation in Liberia, but the effect is not statistically significant (Figure 2).

**17. These results are consistent with the literature on highly dollarized economies in finding that the exchange rate channel is strong** (Alvarez-Plata and García-Herrero, 2008; Baliño et al., 1999). However, in contrast to Dabla-Norris and Floerkemeier (2006) and Berg and Borensztein (2000), the paper establishes that broad money that includes foreign currency deposits has no material predictive power for inflation in Liberia.

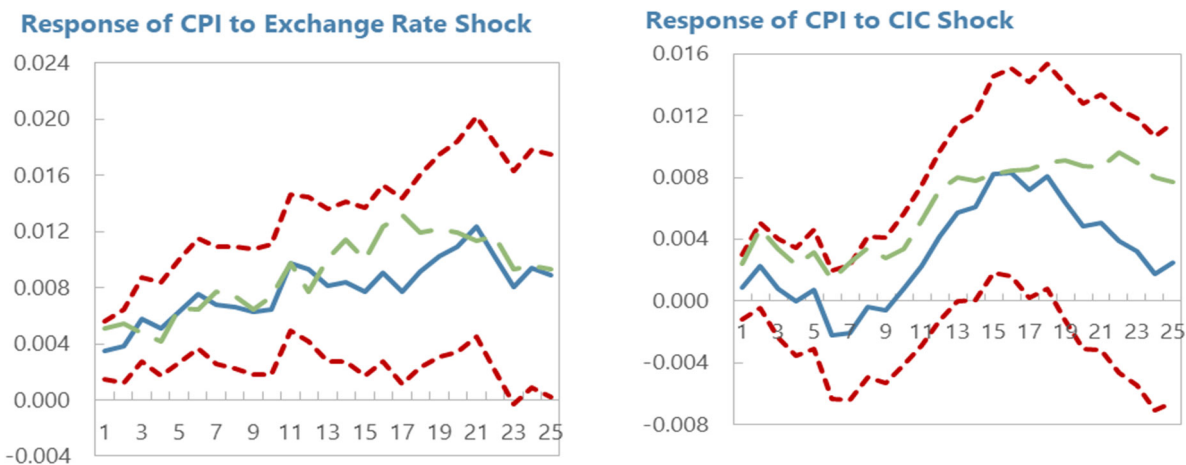
**18. This empirical analysis suggests that the exchange rate, domestic-currency component of narrow money and currency in circulation could serve as valuable indicator variables to guide the conduct of monetary policy in Liberia.** Because the exchange rate has greater predictive power for inflation than the domestic-currency component of narrow money and currency in circulation, it should serve as the primary indicator variable while the domestic-currency component of narrow money and currency in circulation should be used as secondary indicator variables. Once flexible-rate CBL bill auctions will have been introduced, the short-term interest rates could also become valuable indicator variables. These variables should be viewed from a broader perspective of indicators that provide useful information in a timely manner to guide the conduct of monetary policy, including revisiting the target path for reserve money and the interest rate corridor as needed. They could serve as useful proxies of variables for which data is not readily available or of those variables that are observed with significant time lags (Masuch et al., 2003). They could contain some useful information about monetary conditions and the nature of shock hitting the economy. That said, they could play a key role in monetary policy decision-making process especially in countries with undeveloped financial markets (Laurens et al., 2015) like Liberia. They should not be seen as target variable to be rigorously pursued by the CBL or interpreted as intermediate targets in the strict sense of the word.<sup>9</sup>

<sup>8</sup>For the VAR, the impulse response of variables to a shock are identified using the Cholesky decomposition. The ordering used is from money, to exchange rate and lastly inflation. Given high exchange rate pass-through in Liberia, it seems plausible to assume that inflation responds to exchange rate and money contemporaneous. The results with different ordering scheme are qualitatively similar to those reported in Figure 2. For robustness purpose, the paper also estimates the impulse responses of variables to a shock using local projections (Jordà, 2005).

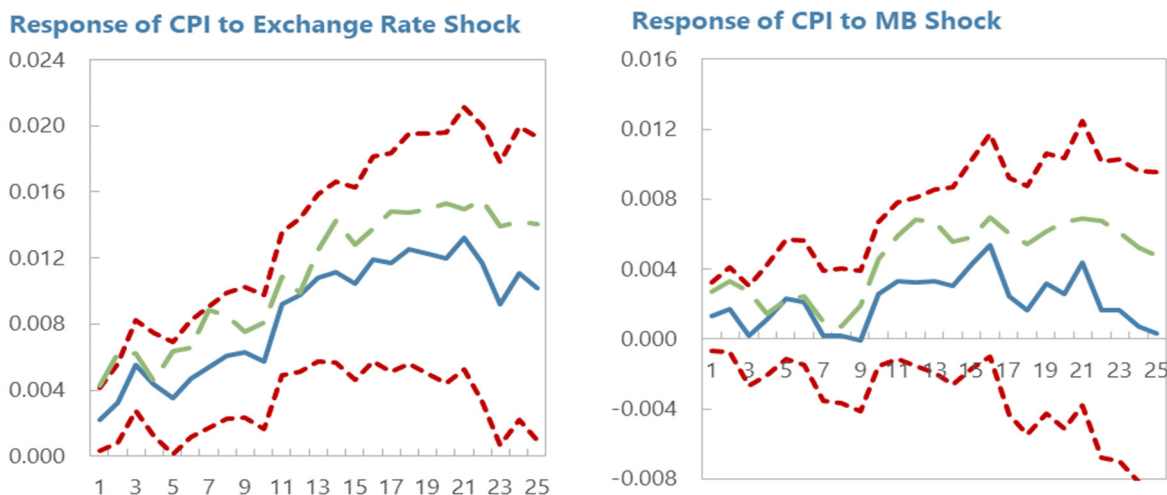
<sup>9</sup>The CBL should continue to allow exchange rate flexibility and only intervene in the foreign exchange market to address disorderly market conditions and as a means to steadily build up international reserves and inject domestic currency in line with the needs of the economy.

**Figure 2. Liberia: Impulse Responses of Inflation (CPI) to a One S.D. Innovations in the Exchange Rate (ER) and Money Aggregates Across Four Different VAR Models<sup>1</sup>**

**A. VAR (CIC, ER, CPI)**



**B. VAR (MB, ER, CPI)**



Source: IMF staff estimates and calculations.

Notes: CPI: consumer price index; CIC: currency in circulation; MB: monetary base; M1: narrow money; M2: broad money.

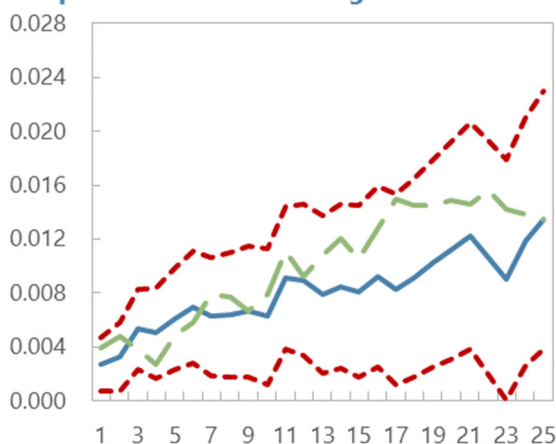
The green dotted lines represent the impulse responses estimated with standard VAR while the blue solid lines represent impulse responses estimated with Jordá's (2005) local projection method. The red dotted lines represent the lower and upper limit of the 90 percent significance confidence bands.

<sup>1</sup>For the impulse response functions, we report the results of monetary aggregates (MB, M1 and M2) that include only domestic-currency components for brevity. The results of monetary aggregates that include foreign-currency components suggest that monetary aggregates that include foreign-currency components have a positive but statistically insignificant effect on inflation.

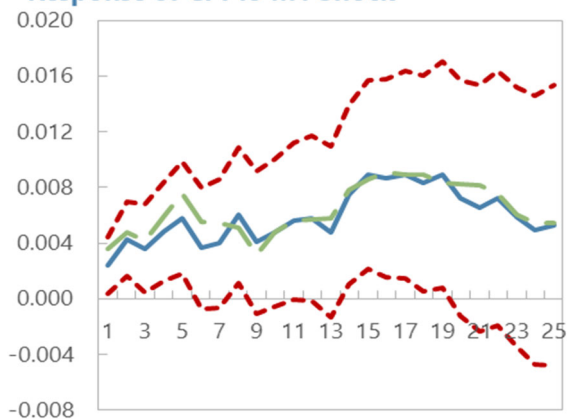
**Figure 2. Liberia: Impulse Responses of Inflation (CPI) to a One S.D. Innovations in the Exchange Rate (ER) and Money Aggregates Across Four Different VAR Models<sup>1</sup> (Concluded)**

**A. VAR (M1, ER, CPI)**

**Response of CPI to Exchange Rate Shock**

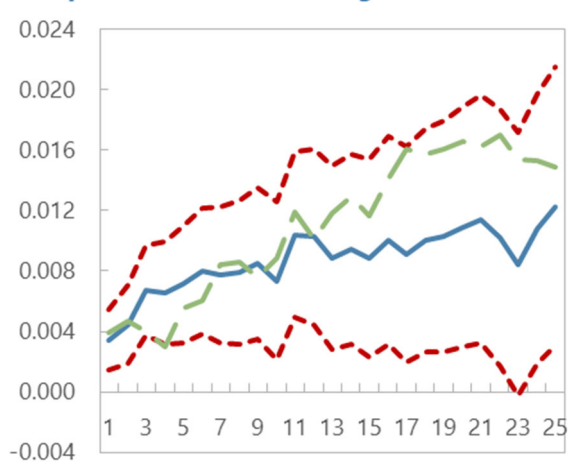


**Response of CPI to M1 Shock**

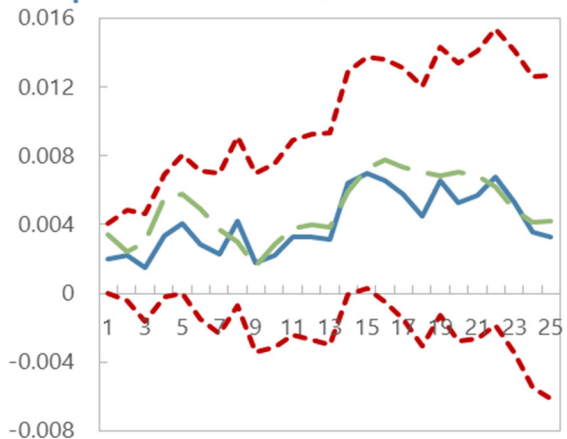


**B. VAR (M2, ER, CPI)**

**Response of CPI to Exchange Rate Shock**



**Response of CPI to M2 Shock**



Source: IMF staff estimates and calculations.

Notes: CPI: consumer price index; CIC: currency in circulation; MB: monetary base; M1: narrow money; M2: broad money.

The green dotted lines represent the impulse responses estimated with standard VAR while the blue solid lines represent impulse responses estimated with Jordá's (2005) local projection method. The red dotted lines represent the lower and upper limit of the 90 percent significance confidence bands.

<sup>1</sup>For the impulse response functions, we report the results of monetary aggregates (MB, M1 and M2) that include only domestic-currency components for brevity. The results of monetary aggregates that include foreign-currency components suggest that monetary aggregates that include foreign-currency components have a positive but statistically insignificant effect on inflation.



**19. The proposed flexible reserve money targeting framework would allow a seamless transition to a full-fledged interest-rate based approach.** A period of flexible reserve money targeting will give the CBL sufficient time to prepare the ground and develop the necessary infrastructure for the next step. Money and interbank markets will develop, the interest rate channel of monetary policy will become stronger, money demand will grow more predictable, monetary policy will gain further credibility, a yield curve will start to emerge, and the risk that banks invest in CBL bills in full-allotment auctions rather than lend will be lower. As this happens, the CBL could deemphasize reserve money as the operating target and transition to an interest rate-based framework. Interest rates at which short-term CBL bills are auctioned on a full-allotment basis would serve as the monetary policy rate and be kept toward the mid-point of the interest rate corridor. The IMF-supported program would need to be redesigned accordingly and drop any explicit or implicit reserve money targets.

### C. Implementing Monetary Policy Under Reserve Money Operating Targeting Framework

**20. The implementation of monetary policy under flexible reserve money targeting is tantamount to effective management of liquidity in the banking sector.** The objective is to ensure that there is adequate liquidity in the system at all times. Price stability is promoted directly through the impact of liquidity management operations on the domestic component of money supply and indirectly through the impact on the exchange rate.

**21. The practical implementation of liquidity management operations should be guided by the assessment of prevailing liquidity conditions in the banking system.**<sup>10</sup> The approach is to derive a target path for total bank reserves that is consistent with medium-term target for reserve money and the forecasts for currency in circulation, as well as known cyclical patterns. This would be compared with the short-term forecast for bank reserves, based on evolution of central bank balance sheet items, to arrive at excess reserves in the banking sector. This would then guide the CBL's short-term liquidity management or monetary policy operations, with CBL-bill auctions managing excess reserves so that reserve money returns to the target path over time.

**22. It is important to note that effective liquidity management requires strong capacities for liquidity monitoring and forecasting.** To this end, the CBL should regularly review and upgrade its liquidity monitoring and forecasting framework.<sup>11</sup> Since liquidity management and forecasting require timely availability of high frequency data, the CBL would benefit from formalizing data sharing within the CBL and between the CBL and Ministry of Finance and Development Planning.

---

<sup>10</sup>See Appendix I for more detail.

<sup>11</sup>The IMF recently provided technical assistance to the CBL on improving liquidity monitoring and forecasting framework (See November 2021 TA Report on Improving Liquidity Monitoring and Forecasting Framework in Liberia).

**23. The CBL could also consider foreign exchange interventions as a last resort for liquidity management.** Foreign exchange purchases should generally be reserved for gradually building up international reserves and as a means to steadily inject domestic currency in line with the evolving needs of the economy. On occasion the CBL could also use foreign exchange interventions to lean against excessive exchange rate volatility and to mitigate disorderly market conditions. Foreign exchange intervention for liquidity management purposes should be avoided to the extent possible.

**24. For medium-term liquidity management purposes and to enhance monetary policy toolkit, the CBL could also consider strengthening the role of reserve requirements as a supplementary tool of monetary policy.** A reserve requirement tool remains appropriate in countries where financial markets are underdeveloped and where the range of market-based tools is limited. But to make required reserves an effective tool, the CBL needs to ensure that all banks comply with the regulation and move away from the notion that reserve requirements are primarily a supervisory tool. The regulation on penalties for non-compliance should be reviewed to make sure that they are set at appropriate levels and then strictly enforced.

#### **D. Promoting De-dollarization in Liberia**

**25. The authorities have made de-dollarization part of their economic reform package, with the time now ripe for a renewed implementation drive.** The government committed to progressively raise the share of the wage bill paid in Liberian dollars from 20 percent until it reaches 50 percent and also increase the use of Liberian dollars to pay vendors (IMF, 2020). A similar commitment was made by the CBL for its spending. However, implementation remained largely stalled pending the establishment of macroeconomic stability and the availability of sufficient high-quality Liberian dollar currency. Indeed, after having made some good progress in this direction and increasing the share of the wage bill paid in Liberian dollars from 20 percent to 35 percent, the government was forced to backtrack due to insufficient sensitization of civil servants and severe shortages of Liberian dollars in late 2020. The de-dollarization trend also suffered a setback from late 2019 as substantial inflows of foreign exchange receipts could not be converted into Liberian dollars due to banknote shortages. As a result, the share of foreign currency loans and deposits started trending upward again from 2021 (Figure 1). Now that the Liberia has made good progress with achieving macroeconomic stability and with the rollout of the currency changeover, the time has come to re-initiate the de-dollarization process in Liberia.

**26. The authorities should pursue a gradual and market-based de-dollarization strategy.** Indeed, cross-country experience suggests that a package of market-oriented policies is critical for a successful de-dollarization, while non-market-based measures and forced de-dollarization usually fail and could, in any event, be unlawful in Liberia given the legal-tender status of the U.S. dollar (see box 1). De-dollarization takes a concerted effort and requires the support of both the government, the central bank, and the rest of the public, with the government taking the lead. Cross-country experience also suggests that de-dollarization takes time and therefore requires patience and persistence. For example, it took about two decades for Peru and Bolivia (between 2000 and 2019)

and Israel (between 1984 and 2002) to make substantial progress on de-dollarization. Like these countries, Liberia needs time to entrench macroeconomic stability and policy credibility more firmly.

**27. Considering the international experience and Liberia’s idiosyncrasies, the following elements could make for a successful de-dollarization policy package:**

- Building a track-record of macroeconomic stability is the precondition for a successful de-dollarization. In this regard, the authorities should continue with reforms aimed at strengthening the role of monetary policy in promoting price stability. The implementation of anti-inflation policies and measures aimed at enhancing monetary policy credibility and central bank independence would go a long way. These should be complemented by measures aimed at instilling fiscal discipline and firmly staying away from monetary financing of the budget. Macroeconomic stability, especially price stability, reduces the hedging benefits of foreign currency and therefore boosts confidence in the local currency.
- The currency changeover needs to be executed in an orderly fashion and implemented so as to guard against excessive currency injection. While the currency changeover should boost confidence in the Liberian dollar and hence foster de-dollarization, it also comes with operational and inflation risks. The CBL’s Currency Changeover Implementation Plan is designed to mitigate operational risks and should be closely adhered to. To avoid inadvertently injecting too much currency and reignite inflation, the CBL will also need to monitor monetary aggregates very closely through the planned new currency management system, the exchange rate, and other pertinent indicators as the currency changeover operation gathers speed later this year. It would be a big setback for de-dollarization if any of these risks materialized.
- The CBL should continue to improve its monetary policy framework to enhance the effectiveness of monetary policy in anchoring inflation and promoting macroeconomic stability. As a prerequisite, the CBL should continue to build the capacity and necessary infrastructure to conduct sound monetary policy. These include technical capacity to analyze and monitor economic developments that may have implications for liquidity and monetary conditions and putting adequate policy tools to manage liquidity in the banking sector in place.
- The authorities could consider prudential regulations that reduce banks’ incentives to focus on foreign currency deposits and foreign currency loans. One potential avenue in the context of Liberia is to review reserve requirements regulation. Currently, the regulation requires commercial banks to hold higher required reserve on Liberian dollar liabilities than on U.S. dollar liabilities, thereby promoting dollarization rather than discouraging it. In the shorter term, reserve requirement ratios on Liberian dollar and U.S. dollar liabilities should be harmonized in line with the CBL’s existing plans and commitments. In the medium to long term, the CBL could consider higher reserve requirements on U.S. dollar liabilities than on Liberian dollar liabilities. Other prudential measures could include higher liquidity requirements on U.S. dollar liabilities, higher capital requirements, provisions against foreign exchange exposure, and extra capital requirements on open foreign exchange positions. These measures would not only foster de-dollarization by increasing the cost of financial intermediation in foreign currency, but also

enhance the resilience of the banking system against exchange rate, liquidity, and credit risks associated with financial dollarization.

- Financial sector reforms, including strengthening the regulatory environment through risk-based supervision could also facilitate de-dollarization by forcing banks to internalize the risks and costs associated with financial intermediation in foreign currency.
- Financial market development through the introduction of a variety of local currency-denominated financial instruments could further foster de-dollarization, as it did in Bolivia, Peru, and Israel (Levy-Yeyati, 2021; Galindo and Leiderman, 2005). To promote de-dollarization in Liberia, the government could review its debt management strategy and rebalance its debt from U.S. dollar to Liberian dollar denomination. Currently very little public debt is denominated in Liberian dollar currency because of its perceived high costs, but this could be addressed by selling government securities in variable-rate auctions to help ensure competitive pricing or considering price-indexed instruments.<sup>12</sup> In the medium term, the government could consider issuing short- to medium-term debt securities on a regular basis and thereafter move to issue medium- to long-term government securities in local currency. This would provide an alternative to investing in foreign-currency assets and enhance the store of value function of the Liberian dollar. It would also help establish a domestic-currency yield curve, which would foster the development of private capital markets by providing a benchmark for pricing domestic-currency instruments and help banks fund and price long-term credit denominated in domestic currency.
- Enhancing the efficiency of foreign exchange markets could also promote de-dollarization. It would improve ready market access to foreign exchange and thus reduce the need to hold foreign currency for precautionary purposes.
- Government operations should be conducted in Liberian dollars to the extent possible. In the short term, the government should start progressively raising the share of its wage bill paid in Liberian dollars from currently 20 percent to 50 percent. Taxes and other government levies should also be increasingly collected in Liberian dollars. Some of these measures could be extended to other government institutions and the private sector could be encouraged to follow suit. But over time, the government should go further than just making and receiving payments in Liberian dollars and start stipulating contracts in Liberian dollars. This should be accompanied by careful sensitization.
- Complementary steps could include administrative measures that have proven to be successful in contributing to de-dollarization in other countries. For example, Peru introduced regulation that required retailers and wholesalers to list prices in domestic currency in 2004 (García-Escribano, 2010). To discourage the use of foreign currency for payments, Bolivia imposed

<sup>12</sup>In the immediate term to medium term, promotion of price indexation especially for longer maturities could also be explored. This would facilitate a switch from foreign currency-denominated instruments to domestic currency-denominated instruments, especially when monetary policy credibility is low. It would be more convincing to promote price-indexed instruments than domestic currency instruments when monetary policy credibility is low. Once monetary policy credibility has improved, price indexation could be phased out.

Tobin-type tax on foreign-currency financial transactions, especially on foreign currency-denominated bank accounts (Levy-Yeyati, 2021). However, for these measures to be successful, the government should sensitize the public adequately and well in time to avoid resistance from the public.

### Box 1. Liberia: Cross-country Experience with De-dollarization

The cross-country experience suggests that macroeconomic stability, especially price stability, is a precondition for successful de-dollarization. To achieve this, a number of dollarized economies, such as, Peru, Vietnam and Cambodia, pursued restrictive monetary policy based on monetary targeting frameworks within managed floating exchange rate regimes at the early stages of disinflation. The monetary aggregate targeting framework was instrumental in reducing and stabilizing inflation from the hyperinflation of the late 1980s and 1990s. The adoption of managed floating exchange rate regimes in countries like Peru between 1990 and 2000, Vietnam during the 1990s, and Cambodia was meant to mitigate risks associated with balance sheet effects and to anchor inflation expectations. Once inflation is anchored and the central bank's credibility is established, there is a tendency to move from quantitative monetary targets to price target within the overall framework of inflation targeting (IT).<sup>1</sup>

Market-based approaches to de-dollarization have proven to be successful in promoting de-dollarization once the countries have made good progress on macroeconomic stability. A combination of prudential policies, which forces economic agents to internalize the risks of operating in foreign currency, and financial market development in domestic currency were instrumental in promoting de-dollarization in countries like Bolivia, Peru, Israel and Uruguay. Peru and Bolivia achieved substantial progress on de-dollarization between 2000 and 2019 through a combination of macroeconomic stability, development of financial markets in domestic currency, and prudential measures, such as higher regulatory requirements on foreign currency liabilities and higher provisions on foreign currency assets and limits on open foreign exchange positions (García-Escribano and Sosa, 2011 and Levy-Yeyati, 2021). Israel also achieved substantial progress on de-dollarization between 1984 and 2002 through a combination of macroeconomic stability, development of financial markets in domestic currency and active banking supervision to ensure that banks fully cover foreign-currency positions (Galindo and Leiderman, 2005).

Non-market-based approaches to de-dollarization such as forced conversion to domestic currency tend to be unsuccessful. Some examples include Pakistan in 1998, Argentina in 2001, Bolivia and Mexico in 1982, and Peru in 1985. In the case of Bolivia and Peru, forced conversion was followed by capital flight in the form of increases in offshore deposits, a sharp decline in financial intermediation, and a sharp increase in inflation (Reinhart et al., 2003; Galindo and Leiderman, 2005). In subsequent years, the policy was reserved because of these unintended consequences.

<sup>1</sup>For example, Peru adopted IT in 2002 while Paraguay in 2011 following their success in reducing inflation rates.

## E. Conclusions

**28. Liberia has made good progress with re-establishing macroeconomic stability and the unfolding currency changeover is addressing cash shortages and the poor banknote quality.** With that, key preconditions are in place for Liberia to push ahead with modernizing its monetary policy framework and de-dollarization.

**29. Regarding the modernization of the monetary policy framework, the paper recommends adopting a flexible reserve money operating targeting framework as a**

**transitional arrangement.** It involves setting a medium-term target path for reserve money consistent with price stability objectives, resuscitating the interest rate corridor system with standing deposit and credit facilities and revamped procedures, introducing variable rate tender auctions of CBL bills, and using CBL bills as the main instrument to manage banks' excess reserves to ensure adequate liquidity at all times while steering reserve money toward its medium-term target path.

**30. More generally, monetary policy should be guided by indicator variables rather than a rigid intermediate target.** The analysis in this paper suggests that the exchange rate, as well as currency in circulation and the domestic currency component of narrow money, have the best predictive powers for inflation in Liberia and should therefore serve as the prime indicator variables. If the indicator variables signal an impending miss of price stability objectives, deviations from the targeted medium-term reserve money path should be allowed and, if the signals persist, the path should be revisited.

**31. The flexible reserve money operating targeting regime will help prepare the ground and the infrastructure necessary for a successful transition to a modern monetary policy framework based on an interest-rate operating target.** Money and interbank markets will develop, the interest rate channel of monetary policy will become stronger, money demand will grow more predictable, monetary policy will gain further credibility, and a yield curve will start to emerge. As this happens, the CBL could deemphasize reserve money as the operating target and transition to an interest rate-based framework. Interest rates at which short-term CBL bills are auctioned on a full-allotment basis would serve as the monetary policy rate and be kept toward the mid-point of the interest rate corridor.

**32. Regarding de-dollarization, the paper lays out the various associated advantages and recommends that a concerted effort be made.** De-dollarization would give monetary policy much stronger traction, strengthen the CBL's lender-of-last resort function, earn Liberia seigniorage, and allow the exchange rate to serve as a shock absorber. Experiences from other countries suggest that it takes a package of market-based measures by the government and the central bank to bring de-dollarization about and that it takes time. In Liberia, such a package could include increasingly affecting government payments and revenue collection in Liberian dollars, stipulating government contracts progressively in Liberian dollars, gradually raising banks' reserve and liquidity requirements for U.S. dollar liabilities above those for Liberian dollars, developing Liberian dollar debt markets, and supporting administrative measures. Macroeconomic stability and price stability would need to be preserved throughout to become more entrenched.

## References

Acosta-Ormaechea, S., and D. Coble, 2011, "The Monetary Transmission in Dollarized and Non-Dollarized Economies: The Cases of Chile, New Zealand, Peru and Uruguay", IMF Working Paper No. 11/87, (Washington: International Monetary Fund).

Alvarez-Plata, P., and A. García-Herrero, 2008, "To Dollarize or De-dollarize: Consequences for Monetary Policy," DIW Berlin Discussion Paper 842, German Institute for Economic Research, Berlin, Germany.

Armas, A., A. Santos, and M. Tashu, 2015, "Monetary Policy in a Partially Dollarized Economy: Peru's Experience with Inflation Targeting," In: Santos, A., and A. Werner. Peru: Staying the Course of Economic Success, pages 191 – 206, (Washington: International Monetary Fund).

Baliño, T., A. Bennett, and E. Borensztein, 1999, "Monetary Policy in Dollarized Economies," IMF Occasional Paper No. 171, (Washington: International Monetary Fund).

Barth, R., 2002, "The Framework of Monetary Policy," In: Khan, M. S., S. M Nsouli and C-H. Wong, Macroeconomic management: programs and policies, pages 139 – 167, (Washington: International Monetary Fund).

Berg, A., and E. Borensztein, 2000, "The Choice of Exchange Rate Regime and Monetary Target in Highly Dollarized Economies," *Journal of Applied Economics*, 3:2, 285-324.

Dabla-Norris, E. and H. Floerkemeier, 2006, "Transmission Mechanisms of Monetary Policy in Armenia: Evidence from VAR Analysis," IMF Working Paper No. 06/248 (Washington: International Monetary Fund).

Erasmus, L., J. Leichter, and J. Menkulasi, 2009, "De-dollarization in Liberia-lessons from cross-country experience," IMF Working Paper No. 37 (Washington: International Monetary Fund).

Galindo, A. J., and L. Leiderman, 2005, "Living with Dollarization and the Route to Dedollarization," Inter-American Development Bank Working Paper.

García-Escribano, M., 2010, "Peru: Drivers of De-dollarization?", IMF Working Paper No. 10/169 (Washington: International Monetary Fund).

García-Escribano, M. and S. Sosa, 2011, "What is Driving Financial De-dollarization in Latin America?", IMF Working Paper No. 11/10 (Washington: International Monetary Fund).

Goujon, M., 2006, "Fighting inflation in a dollarized economy: The case of Vietnam," *Journal of Comparative Economics*, Vol. 34: 564–581.

IMF, 2014, "Liberia: Third Review Under The Extended Credit Facility Arrangement And Request For Waiver Of Nonobservance Of Performance Criterion And Modification Of Performance Criteria—

Staff Report; And Press Release," IMF Country Report No. 14/197. (Washington: International Monetary Fund).

IMF, 2020, "Liberia—First and Second Reviews Under the Extended Credit Facility Arrangement, Request for Waivers of Nonobservance of Performance Criteria and Modification of Performance Criteria," EBS/20/184. (Washington: International Monetary Fund).

Jordà, Ò., 2005, "Estimation and Inference of Impulse Responses by Local Projections," *American Economic Review*, Vol. 95(1): 161–182.

Kokenyne, A., J. Ley, and R. Veyrune, 2010, "Dedollarization," IMF Working Paper No. 10/188 (Washington: International Monetary Fund).

Laurens, B. J., K. Eckhold, D. King, N. Maehle, A. Naseer, and A. Durré, 2015, "The Journey to Inflation Targeting: Easier Said than Done The Case for Transitional Arrangements along the Road," IMF Working Paper No. 15/136 (Washington: International Monetary Fund).

Levy-Yeyati, E., 2021, "Financial dollarization and de-dollarization in the new millennium," Latin American Reserve Fund Working Paper.

Maehle, N., 2020, "Monetary Policy Implementation: Operational Issues for Countries with Evolving Monetary Policy Frameworks," IMF Working Paper No. 20/26 (Washington: International Monetary Fund).

Masuch, K., S. Nicoletti-Altimari, and M. Rostagno, 2003, "The role of money in monetary policymaking," BIS Papers, No. 19, pp-158-91.

Reinhart, C. M., K. S. Rogoff, and M. A. Savastano, 2003, "Addicted to dollars," NBER Working Paper 10015 (Cambridge, MA; National Bureau of Economic Research).



## Appendix I. Operational Guideline for Implementing Monetary Policy under Reserve Money Operating Targeting Framework

*This appendix presents an ideal operational procedure for implementing monetary policy under reserve money operating targeting framework.*

**Step 1: Setting of reserve money target.** In general, the target for reserve money is set based on the assumptions regarding inflation path (consistent with the policy objective), real growth and exchange rate path given money multiplier and velocity of money. In the context of IMF-supported program with Liberia, the target is guided by monetary conditionality under the ECF program, which consists of a floor on net international reserves (NIR) (which is the main component of net foreign assets (NFA)) and a ceiling on net domestic assets (NDA). From the quarterly targets, the central bank could derive some indicative monthly targets consistent with medium-term targets. However, to provide sufficient flexibility for short-term liquidity management in a manner that helps to stabilize short-term interest rates, reserve money targets should serve as medium-term targets or benchmarks that do not dictate, but only guide the medium-term evolution of the daily liquidity management operations.

**Step 2: Deriving the target path for total bank reserves.**<sup>1</sup> The approach would be to derive a target path for total bank reserves (including required and excess reserves) that is consistent with the medium-term reserve money target (determined in **step 1**) and medium-term forecasts for currency in circulation.

**Step 3: Preparing short-term liquidity forecasts.** The approach is to produce short-term (weekly or monthly) liquidity forecasts based on the evolution of the main items of central bank balance sheet, with the variable of interest being the forecasts for total bank reserves. The forecasting horizon should cover at least reserve maintenance period and could also be extended to quarterly to ensure that overtime liquidity management is consistent with quarterly reserve money target. The forecasts should be regularly updated as new information becomes available. To this end, daily liquidity monitoring is key. Coordination with the Ministry of Finance and Development Planning with respect to government cashflow and domestic debt management is also essential. The accuracy of liquidity forecasts is also important as this could help reduce volatility in excess reserves, interest rates, and go a long way in enhancing the efficiency of the liquidity management.

**Step 4: Determining excess reserves/liquidity to guide the size of monetary operations.** Excess reserves/liquidity is calculated as the difference between the forecasts for total bank reserves (**step 3**) and the derived target path for total bank reserves (**step 2**). This would inform the size of monetary operations: how much CBL bills should be issued. That is, the calibration of monetary

---

<sup>1</sup>Using the implied target path for total bank reserves, and not reserve money, as a short-term operational target insulates the interbank money market from short-term fluctuations in demand for currency in circulations (which can be large and outside the control of the central bank – autonomous factor of liquidity) and therefore help reduce volatility of short-term interest rates (Laurens et al., 2015:17).

operations should be based on the estimates of excess reserves/liquidity, with CBL-bill auctions managing excess reserves so that reserve money returns to the target path over time.

**Step 5: Conducting monetary policy operations.**

- The central bank announces the target amount of CBL bills for the auction based on the estimates of excess liquidity (**step 4**).
- Then, let the market (banks) to determine the price (interest rate). For short-term (two-weeks) CBL bills, the pricing of liquidity could be guided by the establishment of interest rate corridor system, with interest rate on standing credit facility acting as a ceiling while the rate on standing deposit facility acts as a floor of the corridor.
- To promote some competition, especially in Liberian context, banks could be allowed to submit multiple bids (maximum of 3 bids per bank).

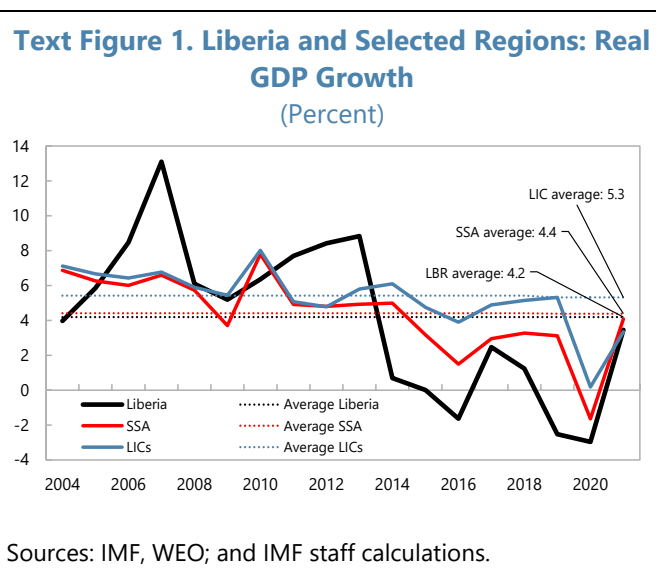
**Step 6: Reassessing the assumptions underlying reserve money target.** To ensure that the reserve money target remains in line with evolving macroeconomic developments (fundamentals), the assumptions underlying the reserve money target (in **step 1**) should be regularly (e.g., quarterly, or semi-annually) reviewed and adjusted as needed (as new information become available). Periodic reviews of the key parameters that inform the monetary program should be done to quantify the deviations from the target and to assess the need to adjust the target. The periodic reassessment could draw on a broad range of information, including the information provided by the proposed indicator variables (exchange rate, currency in circulation and domestic component of narrow money), and economic assessment of the state of the economy. Once the underlying assumptions are updated, the circle starts again with **step 1**.

# LIBERIA'S GROWTH POTENTIAL AND HOW TO GET THERE<sup>1</sup>

**1. This paper analyzes Liberia's economic growth potential and suggests economic policies to help realize it as much as possible.** Two devastating civil wars during 1989-97 and 1999-2003 plunged Liberia into poverty, with real GDP per capita now only a third of it once was. At US\$680 in 2021, it is the 35<sup>th</sup> lowest out of 43 ranked Sub-Saharan Africa (SSA) countries and well below the continent's average of US\$1,600. The poverty rate stood at 51 percent in 2021, also significantly above the SSA average of 44 percent. Raising living standards through sustainable inclusive growth is thus easily at the top of the economic policy agenda. The Government of Liberia is targeting at least 5.8 percent per year by 2023 in its National Development Plan, the Pro-Poor Agenda for Prosperity and Development (PAPD). But how do we get there? What insights does the growth track record offer about Liberia's drivers and impediments to growth and the economy's true potential? What policies are most promising to help unlock it?

## A. Liberia's Economic Growth Record

**2. Liberia's growth performance since the end of the civil war in 2003 is comparable to that of SSA as a whole and other low-income countries (LICs) but shows two distinct phases.** On average, real GDP grew at an annual rate of 4.2 percent between 2003 and 2021, corresponding to 1.1 percent in per capita terms. This is not far off SSA's average growth rate of 4.4 percent and somewhat weaker than the LIC average of 5.3 percent. Like the SSA and LICs groupings, growth in Liberia was stronger in the first decade than in the second, but the swing was much more pronounced, with a very strong 6.7 percent reading during 2003-13 and a painful setback during 2014-21 when the economy contracted by -0.6 percent per year, despite sizable population growth.



**3. In the first decade after the end of the civil war, the economy benefitted from solid economic policies and several important tailwinds.** Peace allowed the resumption of economic activities that had stopped, giving rise to a rebound effect, and spending on the reconstruction of infrastructure gave the economy a welcome jolt. The presence of the United Nation's peace keeping operation (United Nations Mission in Liberia, UNMIL) from late 2003 was instrumental for securing

<sup>1</sup>Prepared by Daniel Jenya and Akito Matsumoto.

peace and establishing confidence, but it also had a strong economic stimulus effect through its budget that peaked at 60 percent of Liberia's GDP. With the signing of a concession agreement with ArcelorMittal, iron ore mining took off, which became Liberia's main export. When the first post-war elected government took office in 2006, the economic recovery at first slowed, but sound macroeconomic policies and reforms that strengthened institutions accompanied by an IMF-supported program gave rise to solid growth through 2013. In 2010, Liberia received debt relief from the IMF and the World Bank under the Heavily Indebted Poor Countries (HIPC) Initiative that reduced the external debt stock to 15 percent of GDP from 90 percent of GDP, thereby further catalyzing donor support.

#### **4. From 2014, the economy stalled amid a series of negative shocks and policy slippages.**

During 2014-15, Liberia was hit hard by the regional outbreak of the Ebola pandemic. International support lessened the human toll and the financial impact, but a recession could not be avoided. The large aid flows also led to an expansion of public administration and the health sector, which proved difficult to reverse later on when priorities shifted, leading to a compression of investment. UNMIL's operations and spending was wound down until the mission was terminated in early 2018, turning what used to be a stimulus into a drag on economic activity. International iron ore prices, which had averaged some US\$150 per ton during 2010-13, plunged to US\$55 per ton in 2015 and the recovery back to US\$100 per ton took until 2020. The change in administration in 2018 led to a temporary loss of macroeconomic control as the government turned to central bank financing in the face of budget pressures, with inflation rising to 30 percent and the Liberian dollar losing 40 percent of its value. A new IMF-supported program to restore macroeconomic stability and repair reform setbacks was starting to gain traction in early 2020 when the COVID-19 pandemic plunged Liberia, along with the global economy, into a recession. Economic activity rebounded in 2021 as the pandemic eased and lockdowns had been lifted, but barely make up the ground lost in 2019 and 2020.

## **B. Sources of Growth**

**5. Growth accounting is a widely used approach in economic analysis to disentangle the sources of GDP growth.** Essentially, it tries to decompose the headline number for GDP growth into the contributions from labor and from capital, where capital is typically further split into physical and human capital. Whatever cannot be explained by these factors is captured by a residual, which is referred to as total factor productivity (TFP). This is because, if the additional labor employed, the increase in workers' skills, and the additional machines used do not fully explain GDP growth, it must be that processes have become efficient or that technical progress has made the economy more productive. Not all the fluctuations in productivity measured this way reflect structural changes though. Cyclical forces can also be at play. A downturn in demand increases the slack in the economy, so that factors are not fully employed and hence produce less output with the same measured inputs. Moreover, since TFP is a residual, it also picks up mismeasures and the contribution from all other factors not explicitly considered in the exercise. For example, workers' skills are typically measured as years of schooling, but the quality of schooling and experiences outside formal education also make a difference. The growth of capital is typically measured as aggregate investment as per the national accounts, without differentiating between highly useful projects, such as a critical road, or inadequate projects, like a bridge that is never

finished. Regarding employment, when data are not available, it is sometimes proxied by population growth, which gives rise to mismeasurements that get subsumed into TFP growth.

## 6. The growth accounting exercise for Liberia uses standard assumptions and data sources.

As often in growth accounting, a Cobb-Douglas production function is used to model how labor and capital combine to produce output. Data availability is scant in the case of Liberia, requiring the making of strong assumptions. The labor share of income is estimated at 55 percent by projecting labor shares on income levels, employment rates, and consumption shares of GDP for a sample of other countries. This is somewhat less than the international average, probably reflecting the importance of Liberia's mining sector. Data for capital are sourced from the Penn World Table 10.0 (Feenstra and others, 2015), with capital stock data reconstructed from capital-output ratios. Years of schooling proxy human capital. Model-based data from the International Labour Organization (ILO) are used to measure employment. Data are only available for the period 2003-19, thus omitting the recession brought on by the COVID-19 in 2020 and the rebound in 2021.

<b>Table 1. Liberia: Growth Accounting: Annualized GDP Growth and Its Components</b>						
	<b>GDP</b>		<b>Capital</b>	<b>Employment</b>	<b>Human Capital</b>	<b>TFP</b>
2003-2014	6.5%		0.5%	1.8%	0.4%	3.8%
2014-2019	-0.1%		1.6%	1.5%	0.4%	-3.6%
2003-2019	4.5%		0.9%	1.7%	0.4%	1.5%
(memo items) Growth rate of relevant factors						
	<b>Per Capita GDP</b>	<b>Population</b>	<b>Capital</b>	<b>Employment</b>	<b>Human Capital</b>	
2003-2014	3.4%	3.2%	1.0%	3.2%	0.8%	
2014-2019	-2.6%	2.5%	3.6%	2.8%	0.7%	
2003-2019	1.5%	3.0%	1.8%	3.1%	0.7%	
Note: Component in the upper part of the table show contribution to GDP growth. For example, 0.9 percent growth under capital is capital's contribution to GDP growth derived as the capital share of the economy times capital growth. Growth rates are calculated using the continuous compound method.						

## 7. For the period 2003-19 as a whole, employment and TFP were the main drivers of growth.

At around 3 percent, employment growth closely mirrored population growth, and contributed 1.7 ppts to total GDP growth of 4.5 percent. TFP added another 1.5 ppts. Due to limited progress with improving educational attainments in Liberia, human capital grew quite slowly at only 0.7 percent, contributing a modest 0.4 ppts. Due to relatively low investment, the capital accumulation added only another 0.9 ppts.

**8. The sharp drop of growth between the first and the second decade after the end of the war reflects a large swing in TFP growth.** Employment and human capital growth were about the same in the two subperiods. Educational attainment of the labor force cannot be changed very quickly without a major effort, and employment closely tracked population growth throughout. Interestingly, capital accumulation actually accelerated. As a result, TFP growth plunged with its contribution declining from +3.8 ppts to -3.6 ppts.

**9. The large decline in the TFP growth contribution probably reflects to some extent cyclical factors, but it is nonetheless disconcerting.** The series of negative shocks in the second subperiod no doubt increased the slack in the economy, thereby depressing TFP. Unless there is a repeat of an unlucky streak, TFP should rebound automatically going forward. However, more pernicious forces were likely also at work. Labor productivity might have declined as rapid labor force growth could have increasingly biased employment growth toward the informal sector. According to the 2016 Household Survey, formal employment account for only a quarter of total employment, but with no further surveys conducted, the hypothesis of increasing informality cannot be verified. There is some evidence that the productivity of capital might have decreased, with the data showing that the share of construction increased at the expense of outlays for machinery and equipment. In education, the opportunity to make more progress after the initial rebound in enrolment right after the end of the war seems to have been missed. And any structural reforms appear to have been insufficient to stem the drop in the growth contribution of TFP.

### C. Policies to Spur Growth

**10. Distilling policies to spur Liberia's economic growth requires deeper analysis.** While sustainable growth needs to be mainly driven by the private sector, which is not under the direct control of policy makers, there is still a lot that the government can do in its own domain and in terms of creating a more favorable environment for private businesses. The main levers are public education, public investment, and the business climate and access to financing. Because some of the measures that would in principle be desirable, such a massive infrastructure program, may not be affordable for now, opportunities for efficiency gains deserve particular attention, along with business climate reforms, which are largely costless. Efficiency enhancing reforms should be pursued in parallel with efforts to mobilize more domestic revenues and support from development partners to expand the overall envelope. Education and infrastructure investment should be afforded high priority when any extra resources are allocated.

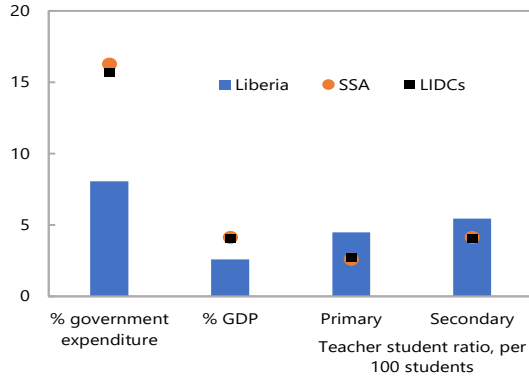
#### Human Capital: Education

**11. Educational attainment and public spending on education are comparatively low in Liberia** (Figure 1). Net enrollment is lower than in SSA and LIC peers. Only 51 percent of school-age children attend school and overage and drop-out rates in primary school are high (IMF, 2019). Expected years of schooling of 4.2 years are the lowest in SSA, where they average 8.3 years. Harmonized test scores are amongst the poorest on the continent. The share of public expenditure that Liberia devotes to education is only about half the SSA or LIC averages and so is spending per student in primary education in PPP-adjusted terms, although the deficit is less stark at the secondary and tertiary levels. Education spending is also highly skewed toward wages and salaries, which account for almost 90 percent of the total during 2015-20. Accordingly, teacher-student ratios are more favorable than the SSA and LDC averages. But teacher quality seems to be an issue. The Ministry of Education (2016) estimates that only 50 percent of early childhood education staff, 62 percent of primary school teachers, and 34 percent of junior and senior high school teachers have the minimum qualifications for their positions. This may be one of the reasons why the gap between average years of schooling and average years of learning-adjusted schooling is particularly large, with the latter pegged at just 2.2 years.

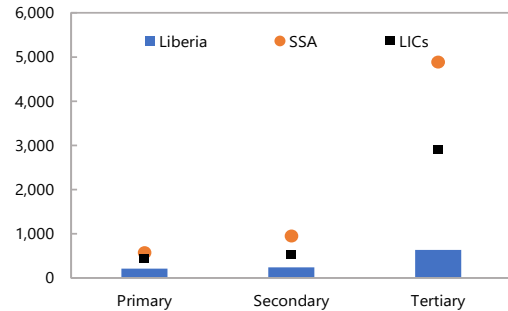
**Figure 1. Liberia: Education Spending and Outcomes**

Government spending on education is low and educational attainments in Liberia compare unfavorably with peers. Additional resources for the education sector are highly desirable, but there is also scope to realize efficiency gains.

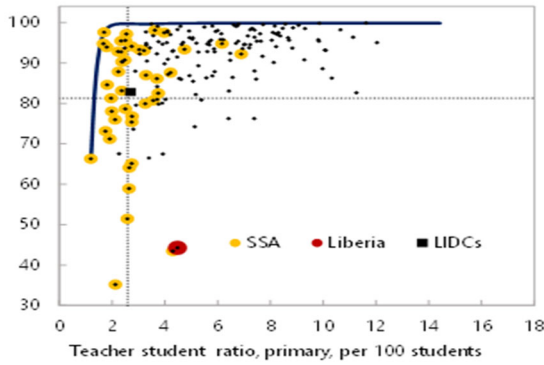
**Government Education Expenditure<sup>1/</sup>**



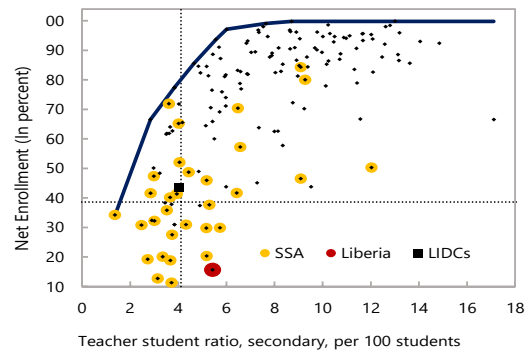
**Government Education Expenditure per Student<sup>1/</sup>**  
(PPP adjusted US\$)



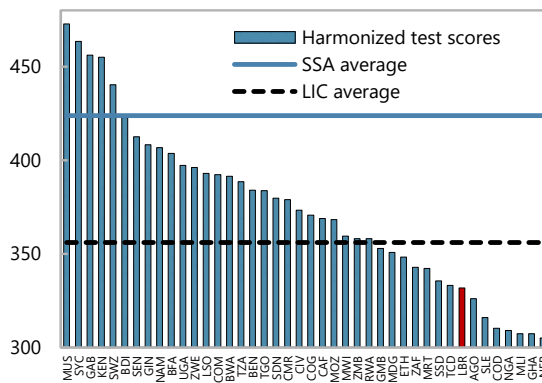
**Teachers and Learning Outcomes (Primary Education)<sup>1/2/</sup>**



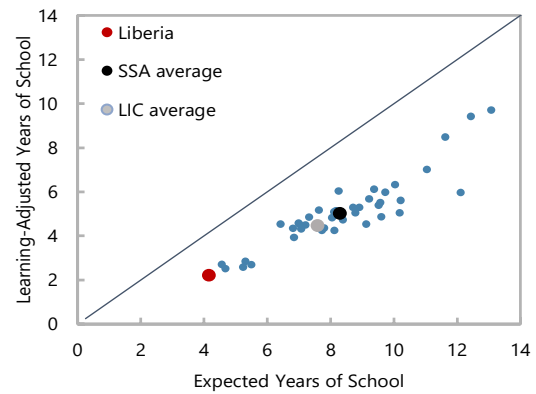
**Teachers and Learning Outcomes (Secondary Education)<sup>1/2/</sup>**



**Harmonized Test Scores**  
(Points on a 300 - 635 scale)



**Expected and Learning-Adjusted Years of School**



Sources: IMF, Expenditure Assessment Tool (EAT); World Bank, HDI; and IMF staff calculations.

1/ Latest data available.

2/ Dashed lines indicate the SSA average.

## 12. The analysis suggests considerable scope for efficiency gains in the education sector.

Simply augmenting education spending to the level in the rest of SSA and changing nothing else may be difficult—it would cost the equivalent of 1.4 percent of GDP to match the SSA spending ratio and almost 2.5 percent of GDP to match the average SSA spending per student in PPP-adjusted terms. However, there is scope for efficiency gains from resource reallocations. Resources should be shifted to education from other sectors. For example, it seems hard to justify that the budget allocation of the Legislature is only some 30 percent lower than the one of the entire education sector. Within the education sector, there is a case for shifting resources from wages and salaries to teaching and learning material and school infrastructure. Other efficiency enhancing measures include a bigger emphasis on teacher training, paying particular attention to teaching in rural areas, and scaling up school feeding program to keep children in school. The existing, though rudimentary, school feeding programs provide a ready basis to build upon. Liberia has also begun to clean up the learner data captured in the Education Management Information System (EMIS) to eliminate ghost learners, thus facilitating a more efficient regional allocation of education resources.

### Physical Capital: Infrastructure and Public Investment

13. **Large infrastructure gaps hamper Liberia’s growth prospects** (Figure 2). Liberia features the lowest percentage of paved roads among selected Economic Community of West African States (ECOWAS) countries. This makes domestic and international trade challenging, especially during the rainy season when unpaved roads often become impassable. Similarly, electricity production and consumption are extremely low compared to peers, while tariffs are extremely high, even after they were cut by about one third in December 2021. Supply by the Liberia Electricity Company (LEC) is also highly unreliable, with large companies, like the local cement producer or Monrovia Airport, and most households not even bothering to connect. Capital accumulation is held back by a lack of domestically financed public investment. Out of total public investment of around 10 percent of GDP in 2021, only 0.2 percent of GDP came from the central government’s budget, with the rest financed by development partners. Only modest amounts tend to be allocated to investment in central government budgets to begin with and they are then typically further compressed in budget execution when revenues fall short or current expenditures overrun their allocations. The incremental capital output ratio (ICOR), a common indicator of investment efficiency, suggests that the productivity of new investment has tanked in the last ten years and is now the third lowest in SSA.<sup>2</sup>

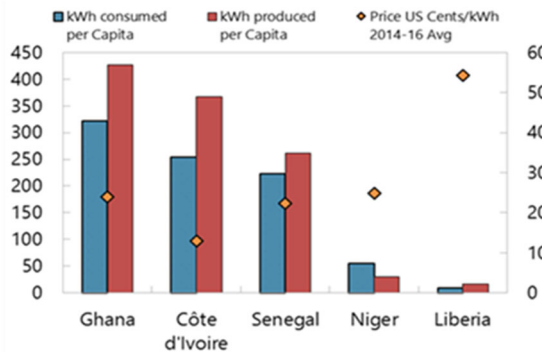
<sup>2</sup>The ICOR is defined as the marginal investment capital amount needed to produce one extra unit of output. It is calculated as growth in the capital stock divided by growth in GDP. Higher ICORs indicate less productive investment.



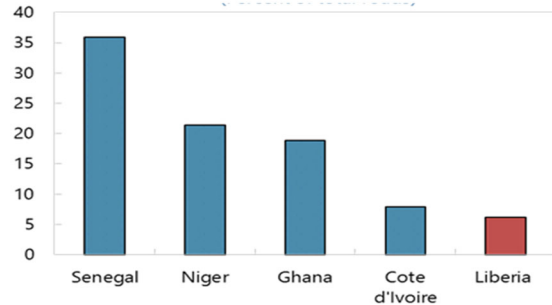
**Figure 2. Liberia: Infrastructure and Public Investment**

Compared to peers, Liberia has large infrastructure gaps, including in the electricity and transportation sectors.

**Selected Countries: Electricity Sector Indicators**

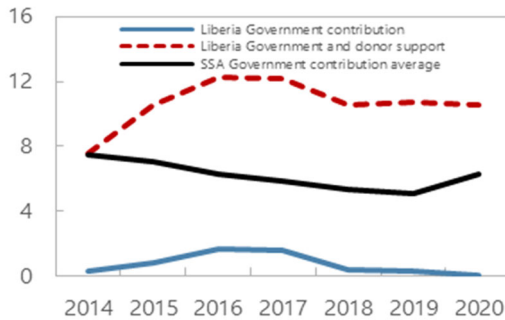


**Selected Countries: Roads Paved (Percent of total roads)**

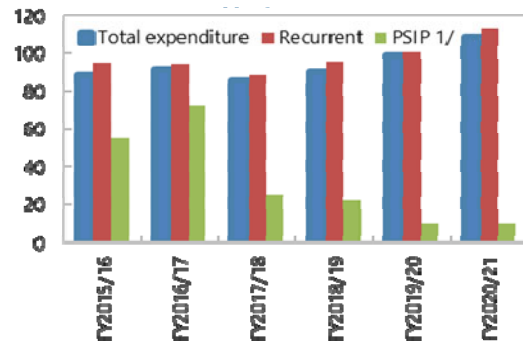


Domestically financed public investment is low and under-executed in budget implementation. Amid weak public investment management, the efficiency of investment dropped sharply and is now one of the lowest in SSA.

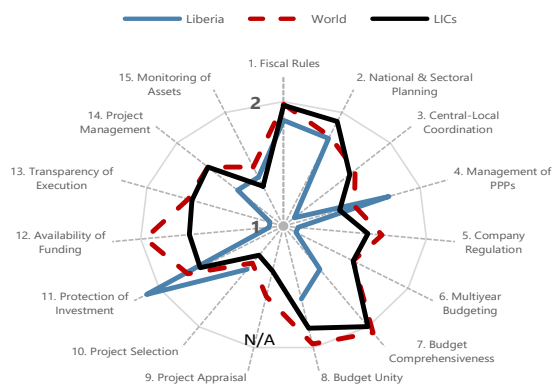
**Liberia and SSA: Public Investment, 2014-20 (Percent of GDP)**



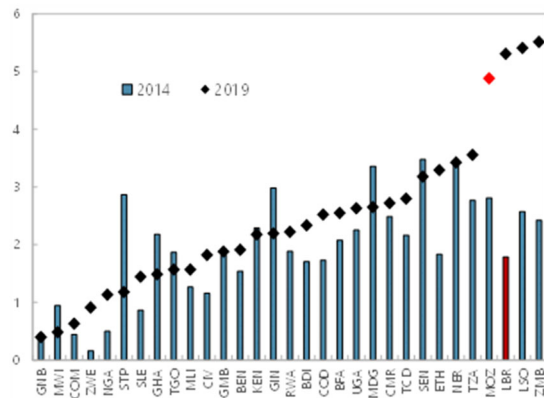
**Budget Execution Rates, FY2016-2021 (Commitment as percent of appropriation)**



**Indicators of Public Investment Management**



**SSA: Incremental Capital Output Ratios (ICORs)**



Sources: Liberian authorities; GFS database; PIMA; Penn World Table; and IMF staff calculations.

1/ Under-execution of the PSIP may be overestimated as some current spending tends to be misclassified as investment in budget, but when outturns are reports, some investment is also recorded as current spending due to weakness in the government's reporting systems.

**14. Like in the education sector, there seems to be ample room to boost the efficiency of public investment.** Again, just increasing public investment to match the SSA average is not an option. It would add 6 percent of GDP to government spending. That said, some improvement in the mix between current and capital spending is possible, by allocating any additional resources primarily to investment, containing the wage bill, and better protecting investment in budget execution. Better public investment management could boost projects' efficiency. The IMF's 2016 Public Investment Management Assessment (PIMA) estimates an overall efficiency gap with respect to physical indicators of 38 percent compared to the SSA and LIC averages. A host of factors is responsible: low institutional strength to manage the public investment program in the areas of multi-year budgeting and safeguarding availability of funding for the selected projects; low institutional effectiveness for project coordination at the local level; insufficient alignment of project selection with national priorities; lack of project monitoring; limited coverage that omits about 60 percent of donor-funded projects; and low transparency of execution due to limited monitoring, evaluation and ex-post audits. Insufficient and late national co-financing of donor-financed projects leads to undue delays or even the loss of projects that would have come at little cost to the budget (Box 1). Finally, much remains to be done to reform mismanaged public entities, such as LEC, which struggles financially and provides poor services despite charging very high tariffs.

#### **Box 1. Liberia: Timelines for the Southern Corridor Road Asset Management Project**

The Southern Corridor Road Asset Management Project (SECRAMP) is among the government's priority projects in line with the PAPD's goal of building roads to connect Monrovia to the rest of the country and the region. The project aimed to rehabilitate and upgrade at least 104 kilometers of road stretching from Ganta to Tappita along the Ganta-Zwedru road corridor through a 15-year public-private partnership (PPP) arrangement. The project was expected to be financed with US\$118 million from the government, the World Bank, other development partners, and the private sector, following the success of a similar investment model for bringing investment to the Free Port of Monrovia. Private financing would be paid back with resources from the National Road Fund, which was set up in 2016 by the Road Fund Act and is financed by revenues from a US\$0.30 per gallon fuel levy with an estimated annual revenue yield of around US\$30 million.

The project was approved in December 2018, construction was expected to begin in 2019, and completion was targeted for 2024. The project included a three-year window after construction to address defects and institution building. However, following delays in remitting funds to the National Road Fund and disagreements between the government and fuel suppliers, which jeopardized income flows of the National Road Fund, private investors pulled out. The project was subsequently restructured, leading to the splitting of the project into two sections: 39 km from Ganta to Saglepie to be financed by the government and 61 km from Saglepie to Tappita to be financed by the World Bank. Construction eventually began in 2021.

Currently, 12 km of the government financed section have been completed while construction on the World Bank financed section is expected to commence in October 2022. Construction is now scheduled to be fully completed in 2026, 2 years later than originally planned.

**15. In the context of the IMF-supported program, the government has expressed commitment to important reforms to address many of the identified issues besetting public investment.** In the Public Sector Investment Program (PSIP), projects that are already underway will get priority. A framework paper to improve the public investment management cycle will be prepared with a view to better integrating donor-financed projects and developing a pipeline of

approved sector projects. Funds allocated to investment will be better protected in budget execution by strictly adhering to the Public Financial Management Act and the Budget Transfer Act. The Ministry of Finance and Development Planning (MFDP) should also review its organizational structure to ensure an appropriate allocation of roles and functions, adequate communication, and sufficient resources to provide effective management of public investment. Moreover, as part of the IMF-supported program, the authorities have undertaken to reform LEC. The additional resources made available to the government through on-lending of part of the August 2021 SDR allocation by the Central Bank of Liberia (CBL) are predominantly earmarked for public investment.

## **Business Climate and Access to Financing**

**16. Structural reforms are a promising avenue to promote growth.** The economic literature establishes clear links. For example, [Hausmann, Pritchett and Rodrik](#) (2005) find a strong effect on economic growth from structural variables, including openness to trade, the presence of marketing boards and socialist economic regimes, black-market premia for foreign currency, and financial liberalization. In a sample of African countries, [Ncube, Soonawalla, and Hausken](#) (2021) demonstrate a positive association between economic growth and improvements in the conditions for starting a business. Moreover, female labor force participation tends to rise when institutions to enforce contracts are strengthened. According to [Kim and Lee](#) (2021), reenforcing the growth orientation of structural conditions promotes medium-term growth. Peruzzi and Terzi (2021) underscore that structural reforms are particularly effective when tailored to local conditions. Within structural reforms, improving access to financing deserves particular attention. It is instrumental for small and medium-sized firms to grow and create jobs. King and Levine (1993) show in their seminal paper that financial development entails stronger economic growth. Bah and Fang (2015) find that financial development explains large parts of the TFP variation across SSA countries.

**17. Liberia's national development plan recognizes the importance of a favorable operating environment for businesses.** According to the PAPD, the following challenges faced by Liberian firms need to be addressed: (i) a weak legal and regulatory framework; (ii) fragile and unclear property rights; (iii) poor infrastructure; (iv) high energy costs, especially for electricity; (v) excessive administrative and regulatory burdens due to red tape, corruption, and lack of transparency; and (vi) difficulties to access finance at affordable terms, particularly for longer maturities. The World Bank's Enterprise Survey for Liberia (2017) echoes these concerns. The five most binding constraints for small firms are, in declining order of importance: access to finance, availability of electricity, taxation, access to land, and customs and trade regulations.

**18. Despite the recognition of these reform needs, progress has so far been limited.** The government established the Business Climate Working Group (BCWG) and took a few actions, such as issuing Executive Order No. 96 geared toward stimulating growth by streamlining administrative requirements for businesses, aliens, concessionaries, and property owners. Obtaining work and residence permits has indeed been simplified and some fees and duties have been cut. In another positive development, port procedures are being simplified and digitalized in a collaborative effort between the port and revenue authorities. Several conferences with business leaders have been held, most recently the National Symposium on Business Climate in June 2021 as a part of the

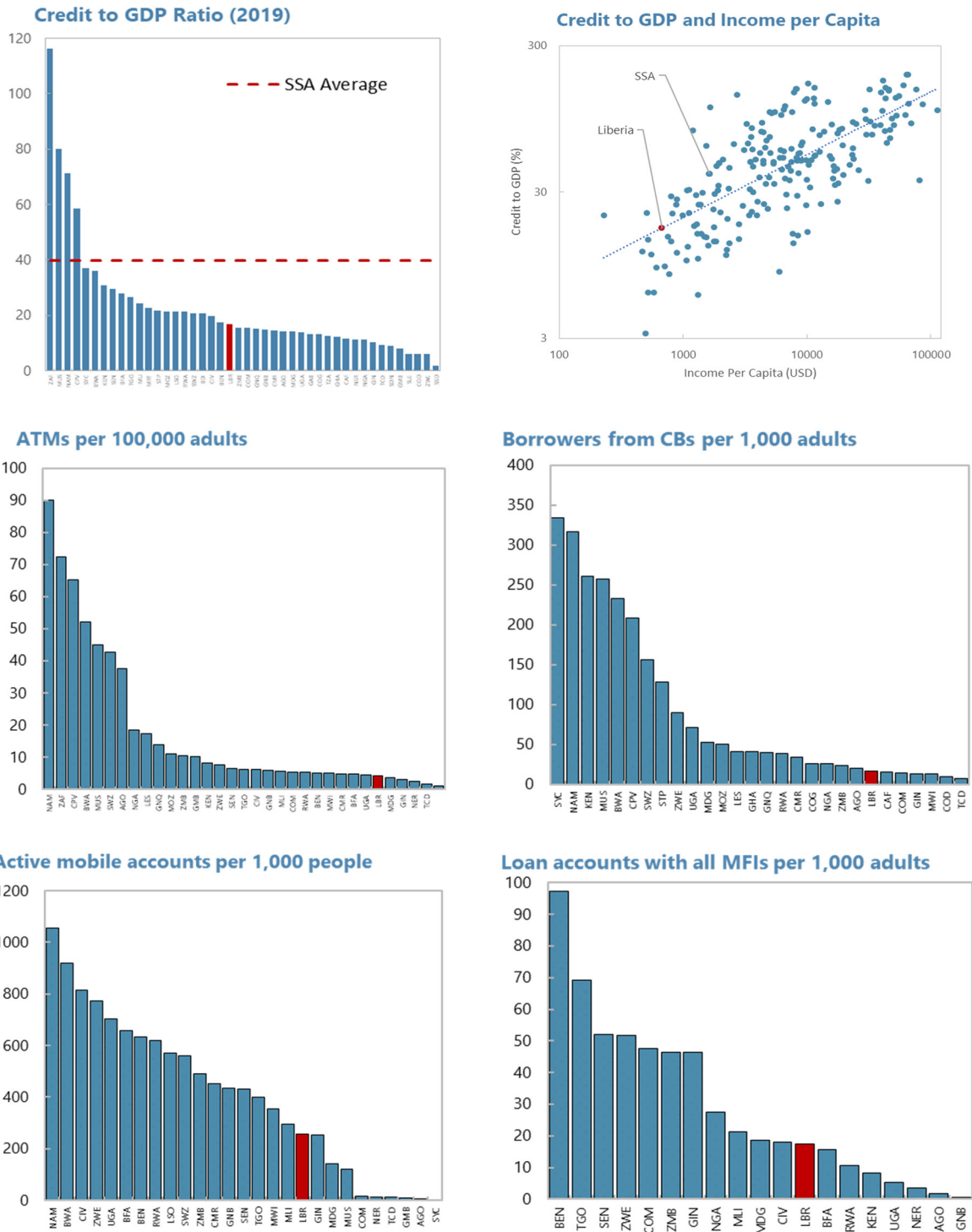
4<sup>th</sup> National Judicial Conference. Reform matrixes have been drawn up, but the Business Climate Secretariat at MFDP, which is tasked with coordinating the efforts amongst implementing agencies, is getting little traction. Business leaders are likewise expressing frustration.

**19. In the context of the IMF-supported program, an effort is now being made to reinvigorate business climate reforms.** The focus is on three specific priority areas (i) facilitating trade across borders and inside Liberia, with a reduction of excessive security checkpoints a particular objective; (ii) registering businesses through digitalization, harmonization, and a one-stop shop at the Liberia Business Registry; and (iii) the enforcement of contracts by strengthening the Commercial Court. At this point, plans are still rather general, but the authorities have initiated consultations with stakeholders. To maintain the momentum, the authorities have set themselves the program target to develop an implementation plan with concrete actions, milestones, and responsibilities by December 2022.

**20. It would also be highly desirable to advance reforms that promote financial sector development in parallel.** At just 17 percent of GDP, bank credit is low by SSA standards, where it averages almost 40 percent of GDP, and indicators of financial inclusion likewise show deficits (Figure 3). Moreover, the gender gap in access to finance is one of the largest on the continent. The jump in the number of mobile accounts during the COVID-19 pandemic, which brought Liberia close to the SSA average, is encouraging. Important reforms are already in train, such as the establishment of a “national electronic payments switch” to improve interoperability for digital payments or the development of a digital credit and collateral registry at the CBL, but more can be done. Greater efforts to resolve non-performing loans by fully applying existing tool, such as the exclusion of delinquent borrowers from banking services by the CBL, and a strengthening of the court system would induce banks to lend more and at better terms. Financial literacy program and connecting Village Saving Associations with the formal banking system would spur financial inclusion.

**21. There is no shortage of other reforms that could usefully be pursued, as long as they do not distract from moving forward in the identified priority areas.** Other issues to be addressed include: (i) unclear property rights with only 20 percent of land deeded; (ii) absence of bankruptcy legislation; (iii) difficult access to laws and regulations; (iv) regulations adopted without consultation and impact assessment; (v) no oversight mechanisms to ensure that administrative procedures are followed; (vi) reservation of certain sectors for Liberian nationals and general minimum investment requirements for foreigners; (vii) excessive physical inspection of imports at ports for lack of a risk management approach; and (viii) notorious case backlogs at the Supreme Court, which could be resolved by establishing a dedicated appeals court.

Figure 3. Liberia: Commercial Bank Credit and Financial Inclusion



Sources: IMF, Financial Access Survey; and World Bank, WDI.

## D. Conclusions

**22. The analysis strongly indicates that Liberia will find its way back to a better growth performance than in the last decade.** The period was exceptionally challenging as Liberia was hit by a series of negative shocks, which is unlikely to be repeated. This contributed to the decline of TFP, but policy slippages, declining efficiency of investment, and failure to accelerate the improvement of educational attainment levels also played a key role.

**23. Policy reforms will determine how much growth will rise in the period ahead.** The analysis has shown that there is considerable room for the country authorities to spur growth along several axis: human capital, infrastructure, and the business climate and access to financing. While more resources should be mobilized to make progress, it has become apparent that a lot can be gained from addressing inefficiencies and implementing reforms that come with little or no costs.

**24. Liberia has many assets to underpin future growth.** It is endowed with ample fertile lands for agriculture, much of it still unexploited; copious rainfall; a climate suitable to grow cash crops like rubber or coffee; a fish-reach ocean; mineral resources in iron ore, gold, and diamonds; a favorable geographical location with potential to become the regional hub that it once was; a beautiful coastline and 40 percent of the Upper Guinea rain forest suitable for high-end tourism; a large and well-educated expat community in the United States; and English as the official language. Liberia has demonstrated that it can attract important international investors, such as ArcelorMittal (iron ore), China Union Investment (iron ore), MNG Gold Inc. (gold), and Aureus Mining Inc. (gold).

**25. The Liberian economy easily has the potential to growth at 5.5 percent per year.** TFP growth will rebound due to a combination of cyclical factors and reforms, strong population growth should ensure robust employment growth, given the low levels of educational attainments it does not take much to engineer strong human capital growth, and it should not be too challenging to maintain the past clip of capital accumulation. More concretely, if TFP growth reverts to the average of the post-war period, if employment grows at the same pace as the population, if capital grows no faster and no slower than it did historically, and if educational attainment levels gradually catch up with those prevailing in Ethiopia today, then the Liberian economy would grow by 5.5 percent annually (Table 2). Strong reforms could easily yield more, but nothing should be taken for granted either.

<b>Drivers of Growth</b>	<b>Growth Contribution</b>
2.6% population growth (UN)	1.4% contribution to growth
3.1% capital accumulation (historical)	1.4% contribution to growth
2.1% human capital growth (catching up with Ethiopia level)	1.2% contribution to growth
1.5% TFP growth (2003-19 average)	1.5% contribution to growth
GDP growth	5.5% growth
Source: IMF staff calculations.	

## References

- Bah, El-hadj and Fang, Lei. 2015. "Impact of the business environment on output and productivity in Africa," *Journal of Development Economics*, Vol. 114(C): 159-171.
- Berg, A., Buffie, E.F., Pattillo, C., Portillo, R., Presbitero, A.F. and Zanna, L.-F. 2019. "Some Misconceptions About Public Investment Efficiency and Growth." *Economica*, 86: 409-430.
- Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer. 2015. "The Next Generation of the Penn World Table" *American Economic Review*, 105(10): 3150-3182. Available for download at [www.ggdcc.net/pwt](http://www.ggdcc.net/pwt)
- Hausmann, Ricardo, Lant Pritchett, and Dani Rodrik. 2005. "Growth Accelerations." *Journal of Economic Growth*, 10(4): 303–29.
- International Monetary Fund (IMF). 2016. "Public Investment Management Assessment" *Technical Assistance Report*, IMF Country Report No. 16/352. International Monetary Fund, Washington, DC.
- International Monetary Fund (IMF). 2019. "Liberia: Article IV Consultation Report", Country Report No. 19/169. International Monetary Fund, Washington, DC. Available for download at <https://www.imf.org/en/Publications/CR/Issues/2019/06/19/Liberia-2019-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-47002>.
- Kim, Jung Yeon and Kwang Yeon Lee. 2021. "Structural Conditions, Structural Reforms and Growth in IMF-Supported Programs." IEO Background Paper BP/21-01/04. International Monetary Fund, Independent Evaluation Office, Washington, DC.
- Robert G. King and Ross Levine. 1993. "Finance and Growth: Schumpeter Might Be Right," *The Quarterly Journal of Economics*, Vol. 108(3): 717–737.
- Ministry of Education, Liberia. 2016. "Getting to Best Education Sector Plan 2017-2021". Available for download at [https://www.globalpartnership.org/sites/default/files/getting\\_to\\_best\\_education\\_sector\\_plan\\_2017-2021\\_liberia.pdf](https://www.globalpartnership.org/sites/default/files/getting_to_best_education_sector_plan_2017-2021_liberia.pdf).
- Ncube, Mthuli, Kazbi Soonawalla, and Kjell Hausken. 2021. "The Links between Business Environment, Economic Growth and Social Equity: A Study of African Countries," *Journal of African Business*, 22(1): 61-84.
- Peruzzi, Michele and Alessio Terzi. 2021. "Accelerating Economic Growth: The Science beneath the Art," *Economic Modelling*, Vol. 103(C).
- World Bank. 2020. The Human Capital Index 2020 Update Human Capital in the Time of COVID-19. World Bank, Washington, DC. © World Bank. Available for download at <https://openknowledge.worldbank.org/handle/10986/34432> License: CC BY 3.0 IGO.