



# SEYCHELLES

## SELECTED ISSUES

June 2017

This Selected Issues paper on Seychelles was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on May 18, 2017.

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.**



# SEYCHELLES

## SELECTED ISSUES

May 18, 2017

Approved By  
**David Owen**

Prepared By Aidar Abdychhev, Mounir Bari, Ben Garnaud, Tetsuya Konuki, Wendell Samuel, Luis Alvaro Sanchez, Alex Sienaert, and Arina Viseth.

## CONTENTS

### ENHANCING RESILIENCE TO CLIMATE AND NATURAL DISASTERS IN SEYCHELLES \_\_\_\_\_ 4

- A. Climate Change: A Global Emergency, More Pronounced In Small Islands \_\_\_\_\_ 4
- B. Impact of Natural Disasters on the Seychelles' Economy Relative to its Peers \_\_\_\_\_ 6
- C. Policy Response: Adaptation and Mitigation \_\_\_\_\_ 9
- D. Financing Options \_\_\_\_\_ 10
- E. Conclusions \_\_\_\_\_ 10

### FIGURES

- 1. Global Surface Temperature, Deviation From 20<sup>th</sup> - Century \_\_\_\_\_ 4
- 2. Coral Reef Watch 60% Probability Coral Bleaching Thermal Stress \_\_\_\_\_ 5
- 3. Global Average Absolute Sea Level Change \_\_\_\_\_ 5
- 4. Calamity Strikes in Small States by Region \_\_\_\_\_ 7
- 5. Small States: Reported Damage Cost and Population Affected Natural Disasters \_\_\_\_\_ 7
- 6. Population Affected by Natural Disasters \_\_\_\_\_ 7
- 7. Event Analysis, Impact of Natural Disasters on Economic Indicators \_\_\_\_\_ 8

### TABLE

- 1. Natural Disasters \_\_\_\_\_ 6

### LONG TERM IMPLICATION OF CLIMATE CHANGE ON PUBLIC DEBT DYNAMICS \_\_\_\_\_ 11

A. Background	11
B. Impact of Climate Change on Long-Term Public Debt Dynamics	12
C. Policy Implications	14

## **A RISK MANAGEMENT FRAMEWORK FOR DISASTERS AND CLIMATE CHANGE** 15

A. Identify Risks and Vulnerabilities	16
B. Invest in Risk Reduction	17
C. Have A Clear Contingency Plan for Disasters	18
D. Arrange Contingency Financing	18
E. Self-Insurance	18
F. Risk Transfer	19
G. Monetary Policy and Financial Sector Issues	20

## **BLUE ECONOMY DEVELOPMENT PRIORITIES FOR SHARED PROSPERITY IN SEYCHELLES** 21

A. Current Situation and Policies	21
B. Prospects for Seychelles' Blue Economy to Boost Shared Prosperity	23
C. Policies Priorities for Seychelles' Blue Economy to Drive Shared Prosperity	26

### **TABLE**

1. Marine - Related Activity Contributions to Seychelles' Economy	22
---	----

## **POSSIBLE OPTIONS TO BUTTRESS THE AUTHORITIES' MEDIUM TERM DEBT TARGET** 27

A. Context	27
B. Revenue Side	28
C. Expenditure Side	29

## **EXTERNAL STABILITY AND COMPETITIVENESS ASSESSMENT** 33

A. Real Exchange Rate Assessment	33
B. Other Indicators of Competitiveness	34
C. Reverse Adequacy	36

## **ASSESSING THE EFFECTIVENESS OF MONETARY TRANSMISSION IN SEYCHELLES** 37

A. Theoretical Background	37
---------------------------	----

B.	Channels of Transmission	38
C.	Assessing the Efficiency of Monetary Transmission Mechanism: An Empirical Analysis	39
D.	Data Specification	40
E.	Results	41
F.	Conclusion and Policy Recommendations	43

**TABLE**

1.	Variance Decomposition Results	41
----	--------------------------------	----

**FIGURES**

1.	No Output and Price Responses to (I) Reserve Money and to (Ii) T-Bill Rate	42
2.	Some Partial Response to Credit and Exchange Rate	43
3.	Velocity and Money	43
4.	Short-Term Interest Rates, 2012-17	44

**MODERNIZING SEYCHELLES MONETARY POLICY FRAMEWORK** 46

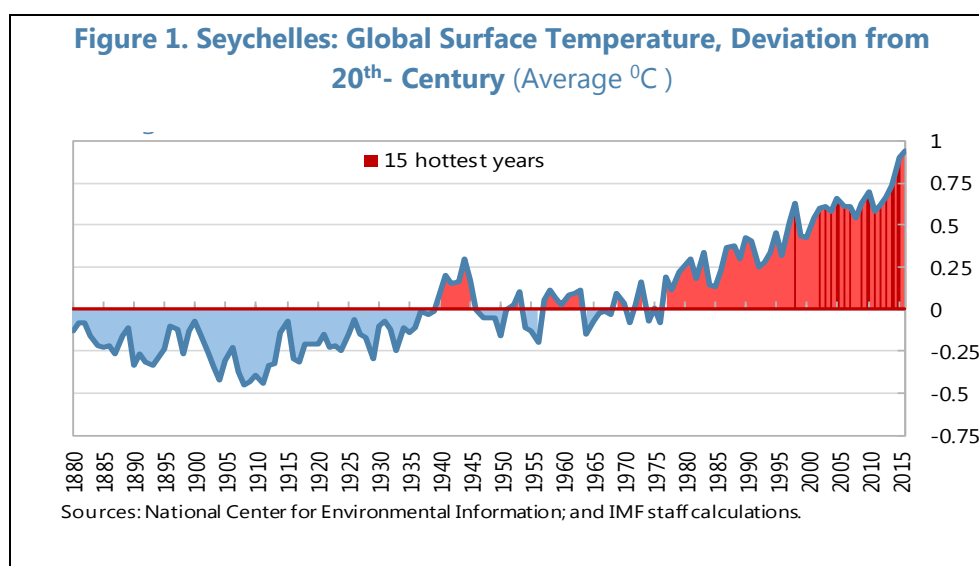
A.	Current Policy Framework	46
B.	Challenges Arising from The Current Monetary Policy Framework	48
C.	Reforms Under Consideration	48

	References	50
--	------------	----

# ENHANCING RESILIENCE TO CLIMATE AND NATURAL DISASTERS IN SEYCHELLES<sup>1</sup>

## A. Climate Change: A Global Emergency, More Pronounced in Small Islands

**1. Climate change, compounded by the recent El Niño, has put Seychelles' archipelago and biodiversity systems at higher risk.** 14 of the 15 warmest years on record have occurred since year 2000 (Figure 1), resulting in a drastic change in the weather pattern of Seychelles. It has also contributed to rising sea levels and massive bleaching of coral, which is significant to islands, particularly for the coastal areas. For Seychelles, which relies heavily on fishing and tourism, the potential damage could be significant, both economically and socially. Rising tides have eroded the coast and contaminated fresh water supply. Changes in rainfall patterns are resulting in intense precipitation events in the wet season while extended periods of drought characterize the dry season. Floods are washing greater amounts of effluents into the sea, resulting in a higher acidification of oceans and accelerating coral bleaching.

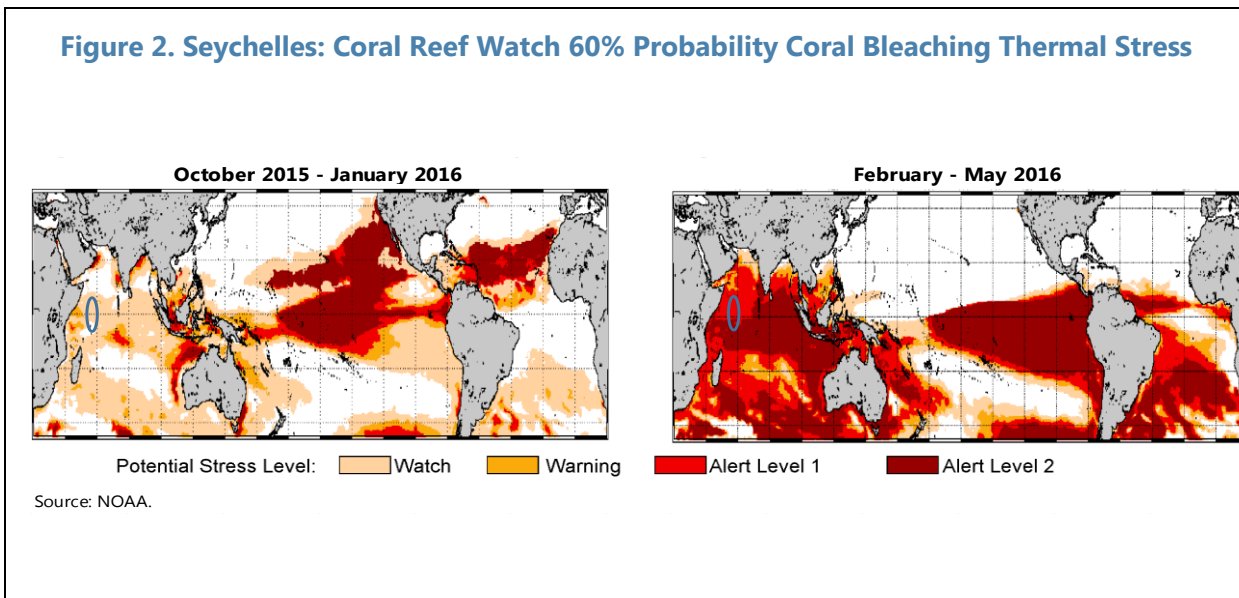


**2. Climate-induced coral bleaching is currently among the greatest threats to coral reefs in Seychelles, causing widespread loss of live coral cover.** The ongoing global coral bleaching since mid-2014, exacerbated by a subsequent 2015-16 strong El Niño, continues to be the longest, most widespread, and most damaging on record (NOAA, 2017). Stressful conditions are rapidly expanding to the Indian Ocean, prompting massive coral bleaching<sup>2</sup> in Seychelles (Figure 2).

<sup>1</sup> Prepared by Mounir Bari (AFR).

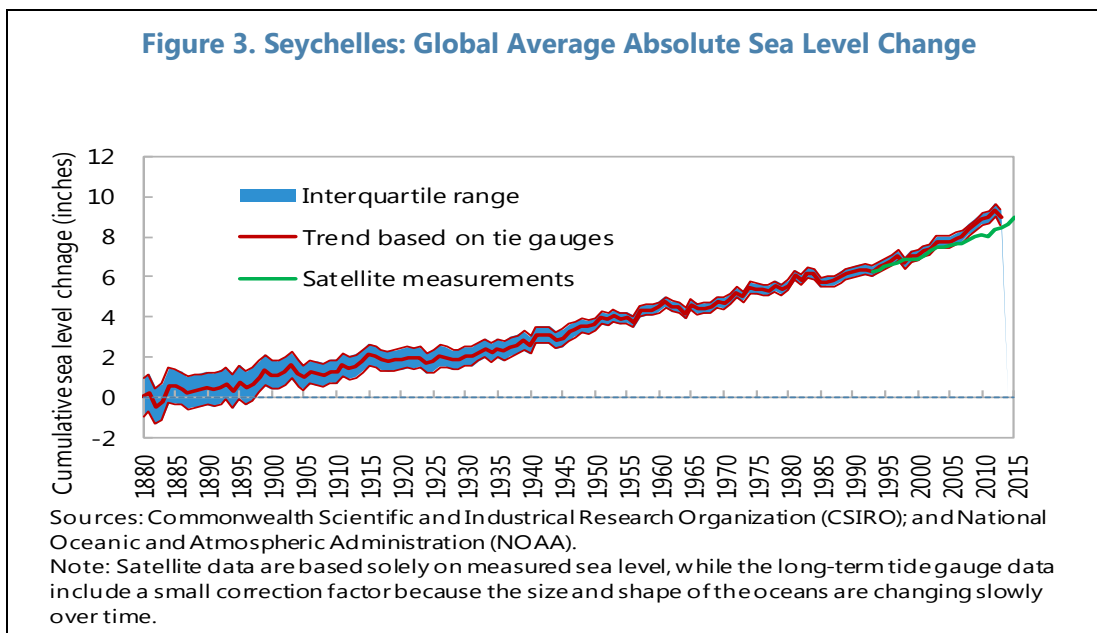
<sup>2</sup> In a recent survey (2016) conducted by a research team from the University of Essex in collaboration with the Seychelles National Park Authority (SNPA) and aimed at understanding the future for Seychelles coral reefs under climate change, average bleaching levels of 80 per cent were documented, but up to 95 per cent for some sites surveyed

**Figure 2. Seychelles: Coral Reef Watch 60% Probability Coral Bleaching Thermal Stress**



**3. The climatic changes have caused significant damage to the country’s coral and mangrove ecosystems.** Vital to Seychelles economic activity, coral reefs are increasingly affected by ocean acidification while coastal areas are eroded every year by about 50 cm (Poupponneau 2015). Coral bleaching has led to deleterious impacts on economic and social development through various channels, including (i) reduction of fisheries output upon which the economy is highly dependent (ii) impairment of the coral reefs’ defensive capacity against land erosion and rising sea levels and (iii) intensification of the magnitude of storm events induced by higher stronger tides and leading to severe erosion of coastline upon which tourism activity highly depends.

**Figure 3. Seychelles: Global Average Absolute Sea Level Change**



**4. Rising sea levels and ocean acidification could wreak havoc on Seychelles' economic and social development.** On a global scale, sea levels have already risen by roughly 9 inches since 1880 (Figure 3) and are projected to increase by another 12 to 35 inches by 2100<sup>3</sup>. In fact, this alarming effect is more perilous for Seychelles given its low-lying elevation and the high concentration of economic development (about 80 percent) along its narrow coastal zones. In Seychelles, sea levels are rising by a 2.3 mm every year, posing serious threats to livelihoods as coastal erosion and flooding continue to emerge. Less obvious to the eye is the danger of ocean acidification contaminating Seychelles fresh water source and irrigated crops.

**5. Climate-induced natural disasters have caused significant damage to the Seychelles' economy.** Given its steep terrain, low-lying<sup>4</sup> archipelago, and geographic location, Seychelles is highly vulnerable extreme weather events. During the period 1997-2016, Seychelles experienced seven natural disasters that affected around 26, 000 people or 30 % of the population and led to a combined economic damage of over 4.6 percent of GDP (Table 1). The increased severity of these natural calamities challenges the country's capacity to cope with such events. For example, Seychelles declared a state of emergency in 2013 as thunderstorms ravaged the island, damaged coastal areas, and caused evacuation.

**Table 1. Seychelles: Natural Disasters**

Year	Disaster	Number of people affected	Estimated reported economic damage (in percent of GDP)
1997	Flood	1,237	0.3
2002	Tropical cyclone	6,800	-
2004	Tsunami	4,830	3.6
2006	Epidemic	5,461	-
2013	Tropical cyclone	3,000	0.7
2014	Flood	4,435	-
2016	Epidemic	253	-

Sources: EMDAT database; and IMF staff calculations.

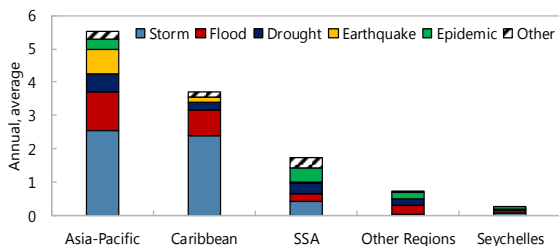
## B. Impact of Natural Disasters on the Seychelles' Economy Relative to its Peers

**6. The economic cost of natural disasters is higher in Seychelles relative to other small states in sub-Saharan Africa (SSA).** Located slightly outside the cyclone belt, Seychelles is relatively less exposed to frequent natural disasters compared to its regional peers (Figure 4). On a regional scale, the average economic cost of natural disasters in Seychelles is roughly 1 percent of GDP, almost twice as much the average damage cost of SSA peers (Figure 5).

<sup>3</sup> United Nations IPCC assessment report 2014.

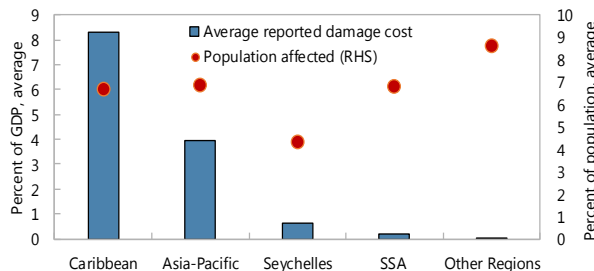
<sup>4</sup> 2–6 meters above sea level on average (NDC 2015).

**Figure 4. Seychelles: Calamity Strikes in Small States by Region (1990-2016)**



Source: EMDAT database; and IMF staff calculations.  
 Note: Other disasters include extreme temperature, insect infestation, landslide, volcanic activity, and wildfire; Other regions include Montenegro and Djibouti.

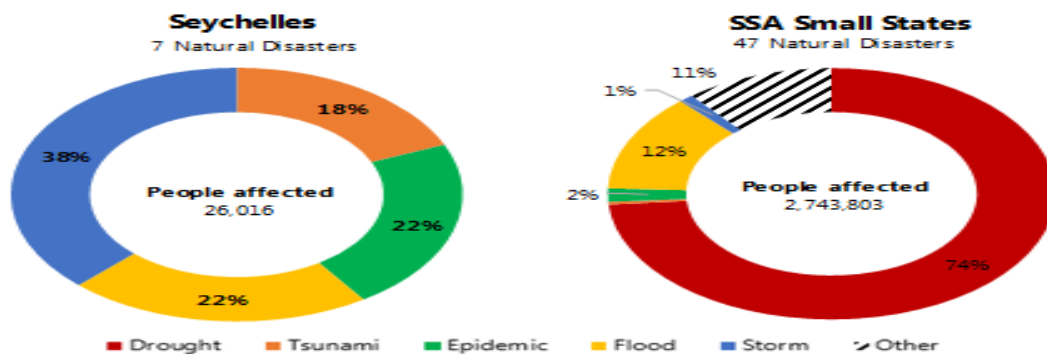
**Figure 5. Seychelles: Reputed Damage Cost and Population Affected by Natural Desasters (1990-2016)**



Sources: EMDAT database; WEO and IMF staff calculations.  
 Note: SSA excludes Seychelles; Other Regions include Djibouti and Montenegro.

**7. Relative to sub-Saharan African peers, the human cost of natural disasters in Seychelles is predominately the result of storms, floods, and epidemics (Figure 6).** While the human costs of storms and epidemics are small in a regional context, they accounted for the lion’s share of population affected by natural disasters in Seychelles during 1990–2014, affecting 15,610 people or 16.6 percent of the population. In a similar vein, floods accounted for 22 percent of the population affected by natural disasters in Seychelles, roughly twice as much the proportion affected in SSA peers. Given its relatively smaller economic base, large disasters are a “fatter tail risk” for Seychelles. For example, a tsunami that struck Seychelles in 2004 affected 4630 people and caused an estimated damage of 3.6 percent of GDP. While droughts accounted for most of the population affected due to natural disasters in SSA small states, the climate-induced and prolonged dry season Seychelles have recently experienced gives cause for concern.

**Figure 6. Seychelles: Population Affected by Natural Desasters (1990-2016)**

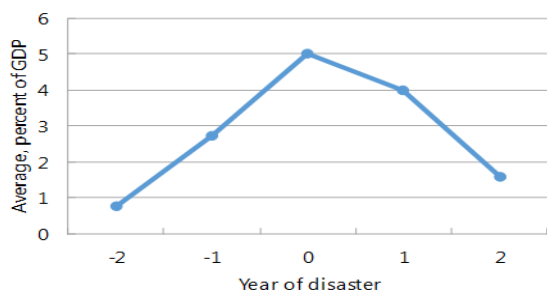


Sources: EMDAT database; and IMF staff calculations.

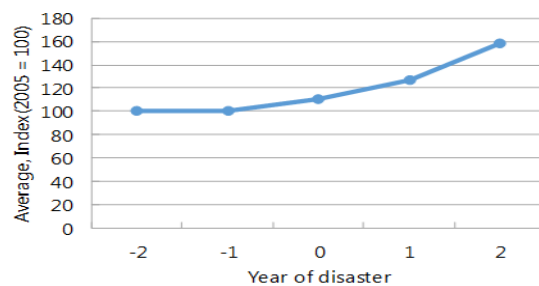


**Figure 7. Seychelles: Event Analysis, Impact of Natural Disasters on Economic Indicators (1990-2016)**

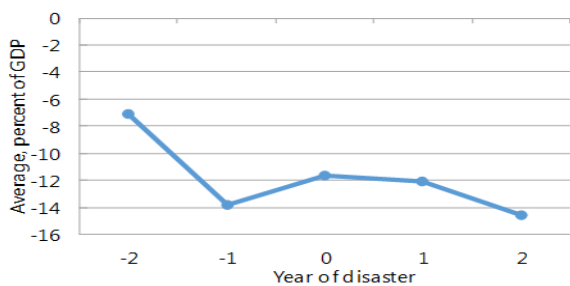
**Real GDP Growth**



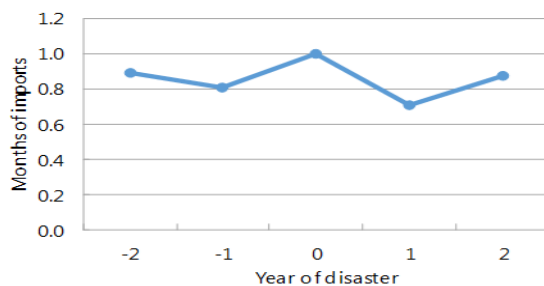
**Food Price Index**



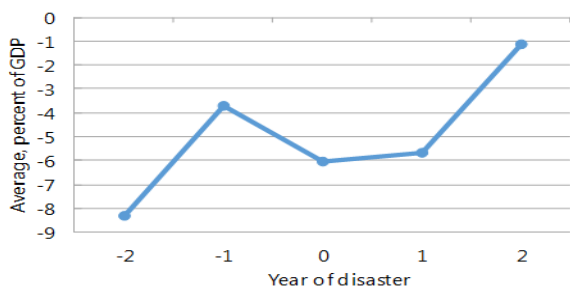
**Current Account Balance**



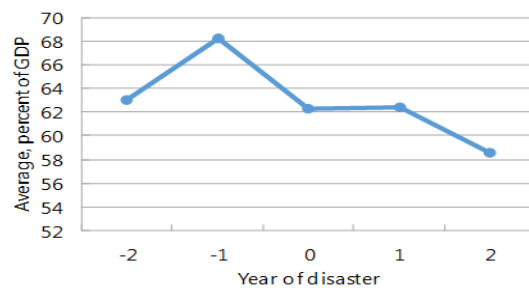
**International Reserves**



**Fiscal Balance**



**External Debt**



Sources: EM-DAT database; Madagascar authorities; WEO and IMF Staff calculations.

## C. Policy Response: Adaptation and Mitigation

**8. A more proactive sector-specific strategy should be articulated to build resilience of the blue economy.** With scarce resources, priority should be given to climate-sensitive economic sectors. Regarding the fishing industry, better management of fisheries and marine ecosystems coupled with increased coverage of marine protected areas could significantly mitigate the impact of climate change on the economy. In a similar vein, sustainable development of the tourism sector entails harnessing the power of tourism to foster habitat restoration, geo-spatial planning, as well as maintenance of green areas and beach vegetation.

**9. To mitigate the impact of climate change, ex-ante resilience policies should be further reinforced.** Geo-spatial planning should be further improved and mainstreamed across all sectors. In this regard, the Seychelles government should improve building codes and most importantly, ensure their rigorous enforcement. Adaptation measures should be centered around watershed and coastal rehabilitations since Seychelles topography limits the water storage capacity. Against this backdrop, a nation-wide drainage study should be undertaken to minimize damage from floods and preserve the nation's pristine coastline – the country's main tourist attraction. Areas of long-term adaptation to climate change include:

*Water security:* the government should seek a fully integrated approach to water management tailored to address issues such as ecosystem health, waste management, water treatment and supply, sewage, and agriculture.

*Energy security:* Seychelles could benefit from a more resilient energy base with greater emphasis on renewable energy where possible. In addition, efficient fuel-based land transport and more use of electric vehicles charged with renewable energy technology is recommended.

*Food security:* New and innovative technologies across all food production, supply and value chains coupled with a reinforcement of skilled human resources, should be introduced to enhance the resilience of the agriculture sector. These measures should be consistent with the Blue Economy framework as well as Seychelles Strategic Plan 2015.

**10. Some diversification away from tourism into fisheries and offshore financial services has reduced Seychelles' vulnerability to external shocks, but tourism will likely remain the mainstay for the next 25-50 years.** Consequently, it is important to minimize the impact of all tourism activities and ensure that eco-tourism activities are as non-intrusive as possible. Involvement of local communities in local tourism development and diversification is a proven method to develop adequate resilience against external shocks to the tourism industry. Such measures will optimize receipts from recreational activities and ensure inclusive growth. In turn, engaged communities would better commit to the protection of coastal areas.

**11. Sizable investment in capacity building remains imperative to weather the impacts of climate change.** Acquiring a better gauge of cyclone patterns, ocean and air currents, and the interplay between climate change and the economy can enhance preparedness and reduce the

impact on population. This entails shoring up reefs as natural storm barriers, installing early storm warning systems and information dissemination systems, as well as building evacuation shelters and sea walls.

## D. Financing Options

**12. The mobilization of adequate financing for climate-related projects remains an enduring challenge to the economy.** To strengthen financing capacity, the government took important measures, including (1) the set-up of focused unit aimed at overcoming hurdles to access climate funding and (2) buildup of innovative financing resulting from lasting engagement with the World Bank, recently on the blue bond. However, cost effectiveness test must be applied on ongoing basis.

**13. Drawing on its budgetary flexibility and independent monetary policy, Seychelles should create larger fiscal buffers for climate change adaptation and mitigation.** For instance, introducing a specific carbon tax, would enable a reduction in other distortionary taxes as well as strengthening revenue mobilization. Innovative financial instrument should be further explored, including weather derivatives, debt swaps, and carbon markets. These instruments would allow the government to centralize and mainstream the climate financing needs related to both mitigation and adaptation.

## E. Conclusions

**14. Seychelles is highly vulnerable to climate change.** Rising sea levels, changing rainfall patterns, increasingly intense and frequent tropical cyclones, and massive coral bleaching are compounding economic and social risks in Seychelles. These risks are further exacerbated by the economy's high dependence on its coastal zone for urban development that is pivotal for its main economic pillars: tourism and fisheries.

**15. The increased frequency and severity of natural disasters in Seychelles is worrisome.** Climate change coupled with the 2015 El Nino effect further increased Seychelles' vulnerability to natural disasters. While the frequency of natural calamities remains lower compared to SSA small states' average, their damage cost is relatively high in Seychelles and poses serious threat to the economy's key sectors – tourism and fisheries.

**16. A policy mix focused on combining adaptation and mitigation strategies is ideal for Seychelles.** Such policies should not only be aligned with Seychelles' NDC, but also with the technical and financial capacity of the government. Experience from other small states suggest that small policy changes can still have a significant impact. To the extent adaptation and mitigation measures are inadequate, insurance policies and innovative financial instruments need to be exploited further.

# LONG-TERM IMPLICATION OF CLIMATE CHANGE ON PUBLIC DEBT DYNAMICS<sup>1</sup>

*Seychelles could be vulnerable to severe natural disasters caused by climate change. While the authorities announced their long-term action plan on climate change mitigation and adaptation, it entails significant fiscal cost. Meanwhile, a natural disaster triggered by an extreme weather event could put the public debt dynamics on an unsustainable path. In this context, the authorities are encouraged to articulate long-term fiscal plans to accommodate the mitigation and adaptation investments and seek to reduce vulnerability to catastrophe.*

## A. Background

**1. While catastrophic natural disasters have so far spared Seychelles, the country would be potentially vulnerable to natural disaster caused by climate change.** In its recent history, it was hit only once by a major natural disaster which entailed economic damage over 2 percent of GDP—the average annual cost of natural disasters for small states.<sup>2</sup> Based on the history, Seychelles ranks 26<sup>th</sup> among 33 small states worldwide as to the vulnerability to natural disasters and climate change.<sup>3</sup> However, as a small archipelagic country, it faces unique challenges regarding natural disasters in the context of climate change. In the long run, rising sea level could pose a serious threat. In the meantime, it may face a catastrophic weather event at any time albeit with low probability.

Year	Disaster type	Number of people affected	Estimated economic damage (in percent of GDP)
1997	Flood	1,237	0.5
2004	Tsunami	4,830	3.6
2013	Tropical storm	3,000	0.7

Source: EM-DAT

**2. The authorities announced their long-term action plans to address the vulnerability to climate change in September 2015.** The country is committed to a multilateral agreement under the United Nations Framework Convention on Climate Change (UNFCCC), which will come into effect in 2020. The authorities estimate that the total cost of priority mitigation and adaptation actions would stand at US\$604 million (US\$309 million for mitigation and US\$295 million for adaptation): 43 percent of the estimated 2016 GDP.<sup>4</sup> This chapter estimates how climate change mitigation and adaptation investments would affect the long-term public debt dynamics under the baseline scenario envisaged by the Extended Arrangement (EFF baseline scenario), illustrates how a

<sup>1</sup> Prepared by Tetsuya Konuki (AFR).

<sup>2</sup> See the Board paper “Small States’ Resilience to Natural Disasters and Climate Change—Role for the IMF” (IMF, November 2016).

<sup>3</sup> See Annex I, “Small States’ Resilience to Natural Disasters and Climate Change—Role for the IMF” (IMF, November 2016).

<sup>4</sup> Republic of Seychelles, “Intended Nationally Determined Contribution (INDC) Under the United Nations Framework Convention on Climate Change (UNFCCC)” (September 2015)

catastrophic natural event could severely derail the country's hard-won economic stability centered on the public debt reduction since the crisis in 2008, and draw some policy implications.

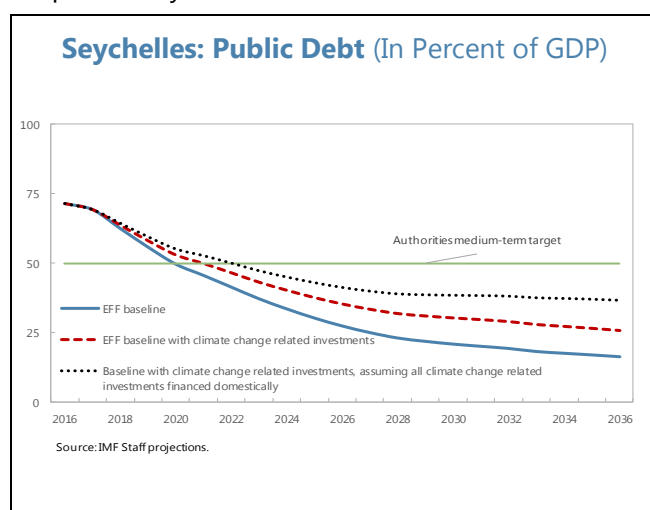
## B. Impact of Climate Change on Long-Term Public Debt Dynamics

**3. Under the EFF baseline scenario, the public debt to GDP ratio is expected to decline steadily over medium to long term.** At the time of the fourth and fifth review under the EFF, the authorities committed to a primary surplus of 3 percent of GDP from 2017 onwards. Assuming the GDP growth would stay around the estimated potential rate (3–3½ percent) after 2018, such policy would allow the public debt to GDP ratio to fall below 50 percent by 2020: the medium-term policy anchor under the EFF. After 2020, we assume that the authorities would stick to prudent policies and the external environment would continue to be benign as follows:

The primary surplus would remain at 3 percent of GDP until 2022, then gradually decline each year to balance after 2030; GDP growth would stay around 3–3½ percent after 2020; and CPI inflation would stay at 3 percent. Under this baseline assumption, the public debt ratio would continue to decline gradually over the long term and would fall to 16½ percent by 2036 (see Figure below).

**4. The authorities' ambitious action plan on climate change mitigation and adaptation would slow down the public debt reduction path significantly.** We make following changes to the EFF baseline scenario: Mitigation and adaptation investments would be executed evenly over the period of 20 years starting in 2018 (primary balance would worsen by the amount of these investments, whose financing is yet to be identified, each year compared with the baseline<sup>5</sup>); One-third of the mitigation and adaptation investments would be financed by external project grants, another one-third by concessional external project loans, and the rest by domestic sources,<sup>6</sup> and GDP growth would notch up starting in 2025 and reach 4½ percent by 2036, thanks to more efficient, clean energy infrastructure, other augmented infrastructure such as roads and ports, and stronger growth in tourism and fishing related industries buoyed by resilience to natural disasters.

**5. Although the public debt is projected to decline each year even under this scenario, it falls below 50 percent by 2022, two years later compared with the EFF baseline (see Figure below).** The public debt to GDP ratio at the end of the projection period under this scenario is estimated at around 26 percent, a reasonably low level but still significantly higher compared with the EFF baseline.



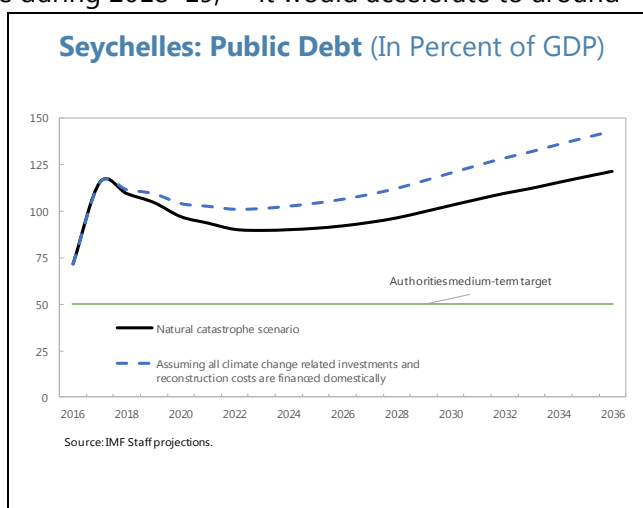
<sup>5</sup> Out of the climate mitigation and adaptation projects which would cost \$604 million, projects amounting of about \$25 million are listed in the authorities' Public Sector Investment Plan (PSIP).

<sup>6</sup> Mitigation and adaptation investments would reduce the primary surplus by ¼–1¼ percent of GDP each year during the projection period compared with the EFF baseline scenario.

When we assume all the climate change related investments are financed domestically, the debt to GDP ratio would decline at a much slower pace than under the EFF baseline and is projected to stand at around 36½ percent in 2036. This highlights the importance of finding concessional external sources to finance the investments.

**6. A catastrophic natural disaster could severely derail the country’s hard-won economic stability centered on the public debt reduction since the crisis.** Although Seychelles has so far not experienced such a disaster, a mega storm could hit the country at any time given the climate change. We assume, as a tail risk scenario, that the country would be hit by a catastrophic storm causing economic damage of 30 percent of GDP in 2017, before the country starts implementing mitigation and adaptation investments.<sup>7</sup> We make the following assumptions under this catastrophic disaster scenario:

GDP would be reduced by 30 percent in 2017 in real terms compared with the baseline, real GDP growth rate would be the same as the baseline rate during 2018–19,<sup>8</sup> it would accelerate to around 8½ percent during 2020–22 buoyed by a rebound in tourism and fishing related industries and reconstruction activities, and then it would return to the same rate as the EFF baseline with climate change investments after 2023; The Seychelles rupee would depreciate by 30 percent against the major currencies in 2017, and gradually recover to the same level as the baseline by end-2022; CPI inflation would accelerate to over 15 percent by end-2017 and gradually decline to the baseline rate by 2020. Reconstruction investments, total costs of 15 percent of GDP, would be implemented over the five-year period starting 2018 (3 percent of GDP per year); One-third of the reconstruction costs would be financed by external project grants, another one-third by concessional external project loans, and the rest by domestic sources; Climate change mitigation and adaptation investments would be implemented as in the climate change investment scenario.



Under this catastrophe scenario, the public debt to GDP ratio would spike to 115 percent in 2017 from slightly over 70 percent in 2016, due to a massive revenue decline and valuation impact of external debt. Public debt to GDP ratio would gradually decline for the next several years to around 90 percent supported by economic growth and revenue recovery and external grants and concessional lending. However, it is projected to rise again in mid-2020s as the principal repayments to the concessional borrowing resumes, coupled with much heavier interest payment burden and

<sup>7</sup> About 9 percent of disasters in small states involve damage of more than 30 percent of GDP (see the Board paper “Small States’ Resilience to Natural Disasters and Climate Change—Role for the IMF” (IMF, November 2016)).

<sup>8</sup> Tourism and fishing industries activities would continue to be subdued for two years after the disaster, which will offset the positive impact of reconstruction activities.

climate change mitigation and adaptation actions: it could reach 120 percent by 2036 (see Figure below). One natural catastrophe could completely undo the Seychelles' hard-won economic stability in the past eight years.

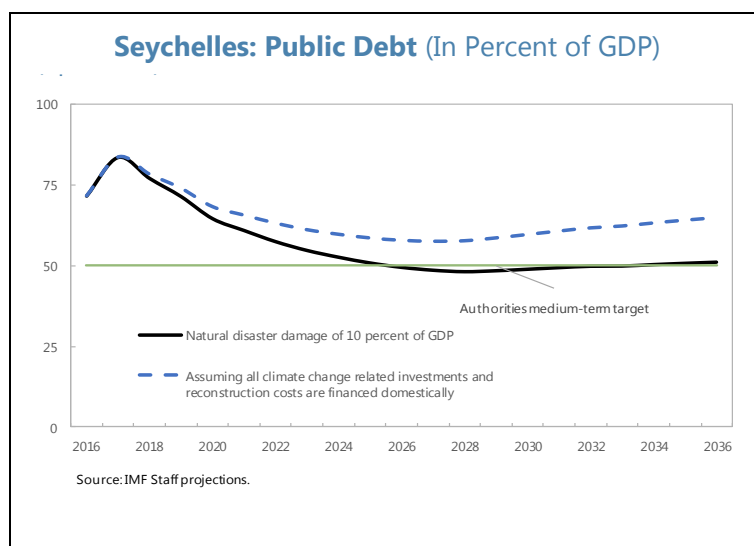
**7. A natural disaster of a much smaller scale than the previous scenario could prevent the public debt from declining steadily.** The figure below illustrates the long-term dynamics of public debt when Seychelles is hit by a storm causing economic damage of 10 percent of GDP in 2017. We apply the similar assumptions on the path of GDP growth, exchange rates, inflation, reconstruction investments and their financing to the previous scenario on a smaller scale:

- GDP would be reduced by 10 percent in 2017 in real terms compared with the baseline, real GDP growth rate would be the same as the baseline rate during 2018–19, it would accelerate to around 6 percent during 2020–22, and then it would return to the same rate as the EFF baseline with climate change investments after 2023;
- The Seychelles rupee would depreciate by 15 percent against the major currencies in 2017, and gradually recover to the same level as the baseline by end-2022;
- CPI inflation would accelerate to over 10 percent by end-2017 and gradually decline to the baseline rate by 2020.
- Reconstruction investments, total costs of 5 percent of GDP, would be implemented over the five-year period starting 2018 (1 percent of GDP per year) and financed in a similar way to the previous scenario;

**8. Under this scenario, the public debt to GDP ratio would spike to around 85 percent in 2017 from slightly over 70 percent in 2016.** While it would gradually decline for the next several years to slightly below 50 percent supported by economic growth and revenue recovery and external grants and concessional lending, it is projected to stop declining after that as the principal repayments to the concessional borrowing resumes. The public debt to GDP ratio could reach 51 percent by 2036.

## C. Policy Implications

**9. Going forward, Seychelles is encouraged to step up efforts to enhance ex-ante resilience and ex-post adaptive capacity.** Although Seychelles has not encountered severe natural disasters so far and the probability of such an event takes place would be quite low, the catastrophe scenario illustrated above implies that the fiscal sustainability could be easily jeopardized by one severe natural disaster. Furthermore, even without such an event, over the long-term Seychelles would be exposed to a threat



posed by rising sea level in the context of global warming without adequate mitigation and adaptation investments.

**10. Although natural disasters and climate change are beyond Seychelles' control, cross-country best practice and the authorities' Nationally Determined Contribution (NDC) under the UNFCCC suggest several important elements of an effective strategy:**

***Create fiscal space for climate change mitigation and adaptation over the medium term.***

Climate change related spending is estimated to cost almost 1 percent of GDP each year over the next 15–20 years. The authorities should articulate measures to enhance revenue and control expenditure to create space for this critical public investment. On the revenue side, the authorities could (i) introduce a carbon tax gradually in line with the recent FAD recommendation; (ii) introduce the sugar tax that is under consideration; and (iii) align the business tax of the tourism and fishing sectors with the other sectors. On the expenditure side, (i) growth in wage bill and goods and services could be contained to a level significantly lower than the trend recent years; (ii) SOE sector reform could save current transfers to SOEs over the medium term; (iii) the social welfare program could be better targeted; and (iv) full implementation of Program Performance Based Budgeting (PPBB) and effective use of Public Private Partnership (PPP) could improve efficiency of public investment and create space for climate change related investments.<sup>9</sup>

***Incorporate disaster risks in public finance management.*** The government needs to explicitly integrate climate-related natural disaster risks into the medium-term fiscal framework and debt sustainability analysis. This would help identify how much to self-insure by creating an adequate fiscal buffer within the budget. Capacity building support from the Fund and other IFIs could play an important role on this front.

***Explore disaster risk transfer mechanism.***<sup>10</sup> This issues is discussed in detail in the next chapter.

## **A RISK MANAGEMENT FRAMEWORK FOR DISASTERS AND CLIMATE CHANGE<sup>1</sup>**

*Seychelles has many good elements of a disaster risk-management framework, but could benefit from systematic evaluation of climate/disaster risks, their inclusion in the national fiscal risk statement, and efforts to strengthen ex-ante disaster risk financing.*

**1. Elements of a good climate/disaster risk management framework have been**

<sup>9</sup> See another SIP chapter "Possible Options to Buttress the Authorities' Medium-term Debt Target".

<sup>10</sup> See another SIP chapter "Climate Change and Disaster Risk Management".

<sup>1</sup> Prepared by Wendell Samuel (AFR)

(continued)



developed by the World Bank and by Clarke and Dercon (2016).<sup>2</sup> These have been summarized in IMF (2016) in the table below, and are discussed in more detail in the rest of this note, with reference to Seychelles where relevant.

<b>Seychelles: Framework for Disaster Risk Management</b>		
<b>Elements of disaster preparedness policy</b>	<b>Global Disaster Risk Framework (World Bank and UN)</b>	<b>Dercon and Clarke (Dull Disasters)</b>
<b>A. Identify risks and vulnerabilities</b>	Assess risks by identifying vulnerabilities and reviewing probabilities	Adopt a fast, evidence-based decision making process that can trigger an action plan in the event of a disaster.
<b>B. Invest in risk reduction</b>	Integrate risks into the medium term investment program	
<b>C. Have a clear contingency plan for disasters</b>	Explicitly integrate risks into the fiscal framework and budget planning	Agree in advance a coordinated plan for post-disaster action.
<b>D. Arrange contingency financing</b>		
Risk retention (self-insurance)	Build extra fiscal reserves, financial sector capital buffers, and foreign reserves to help finance post disaster emergency costs and early reconstruction.	Have financing on standby to ensure that the plan can be implemented.
Risk transfer	Use insurance to shifts risks to capital markets.	

## A. Identify Risks and Vulnerabilities

**2. The recognition and inclusion of climate change and natural disaster risks in the country's statement of fiscal risks is an emerging international best practice.** This demonstrates that the authorities have considered the potential impact of these risks on government finances and are preparing to address them should they materialize.

**3. Risks are well-identified in Seychelles, although work remains to be done to determine how they will affect the public finances.** While Seychelles is not among the hardest hit by natural disasters, it is very vulnerable to climate change. The Seychelles archipelago appears to lie outside of the regular Indian ocean cyclonic zone. However, in recent years the country has been affected by tsunami, floods and occasional cyclones without catastrophic impacts (see Chapter I). Climate change can significantly increase the frequency and intensity of storms and change their patterns

<sup>2</sup> Climate change refers to the long run changes in weather patterns in response to global warming. Natural disasters, on the other hand, are extreme, sudden events caused by environmental factors, which can be exacerbated by climate change.

over the long term. Another significant vulnerability is periodic coral bleaching, the last of which occurred during 2015/16. Meanwhile, sea level rise in Seychelles will affect both tourism and fisheries over the long term as hotel infrastructure could be destroyed or have to be relocated in the absence of strengthening of coastal defenses. Climate change may also affect the migration pattern of some species of fish reducing the size of catches.

**4. Seychelles plans to prepare a fiscal risk statement as part of the 2018 budget, that would be presented as part of the budgetary proposals.** It would be useful if initial steps to quantify the fiscal risks emanating from natural disaster and climate change are included in the fiscal risk statement.

## B. Invest in Risk Reduction

**5. Seychelles has already begun to integrate risks into its medium-term investment program.** In their NDC, the authorities have identified priority climate mitigation and adaptation expenditure amounting to about 40 percent of GDP. On the mitigation side, these investments include diversifying the electricity generation infrastructure to achieve 15 percent of renewable energy by 2030 and shifting land transport to renewable sources of energy. Regarding adaptation, significant investment will be for critical infrastructure including the port, coastal management and tourism.<sup>3</sup>

**6. Strengthening the public investment management framework is a priority for effective risk reduction.** Integrating climate change investment into the government investment program and the scale-up of such spending would require capacity development in investment planning and regulation including the management of PPPs; and in investment implementation. Preliminary results of the recently concluded PEFA assessment suggest that the authorities receive high grades for expenditure control, financing and transparency, but implementation capacity needs to be strengthened as reflected in under-execution of the capital budget in recent years.

The authorities could also benefit from the IMF Public Investment Management Assessment (PIMA) tool, which provides a comprehensive diagnostic of a country's institutional capacity.<sup>4</sup>

## C. Have A Clear Contingency Plan for Disasters

**7. Risk assessment should inform comprehensive contingency plans for natural disasters.** For example, country risk profiles and hazard maps should be an integral part of the design of contingency plans.<sup>5</sup> They should also be developed in conjunction with incentives for households and business to adopt risk reduction behaviors. Delays in agreeing intervention priorities, lack of clarity in leadership and coordination roles between different levels of government and the

<sup>3</sup> An illustration of how such investments could affect the long-term dynamics of the public debt is presented in Annex I.

<sup>4</sup> See "Making Public Investment More Efficient" and PIMA framework (IMF).

<sup>5</sup> Seychelles' disaster risk profile can be viewed at <https://www.gfdrr.org/disaster-risk-profile-seychelles>.

responsible foreign counterparts, among others, have been cited as impediments to good planning by Clarke and Dercon (2016), based on historical events. To avoid such delays, contingency plans should carefully assign roles, spell out essential procedures and identify the critical resources that would be needed for a given response. Seychelles has set up a Division of Disaster Risk Management, which oversees contingency planning and has collaborated with the World Bank (under the CAT DDO—see below) to expand the coverage of plans.

**8. Budget flexibility is essential for agile response.** Even the best laid contingency plans could fail because of budget inflexibility to provide short-term financing. At the macroeconomic level, medium-term budgets with contingencies for natural disasters are regarded as best-practice. At the micro level, the budget law should permit rapid reallocation of expenditure to take care of the most pressing needs. Recently two Caribbean small states, in the context of IMF supported programs, have adopted fiscal responsibility laws that allow them to create fiscal space and to accommodate natural disasters through escape clauses.<sup>6</sup>

## D. Arrange Contingency Financing

**9. The World Bank proposes a risk-layering framework based on the frequency and severity of natural disasters in relation to the cost-effectiveness of risk transfer (see Table below).** Specifically, for smaller/more frequent disasters governments should be able to cover the costs from their own resources more cheaply than taking out insurance. Governments may also be able to mobilize emergency grants or loans on a concessional basis in the immediate wake of

Disaster Financing Risk Layering Matrix		
Probability of event or return period	Ex ante Financing	Ex post Financing
5 percent or up to 20 years Up to 3 percent of GDP	Budgetary reserves	Emergency budget allocations
3.33 percent or 20 to 30 years Up to 5 percent of GDP	Contingent loans	Emergency loans
1 percent or 30 to 100 years Above 5 percent of GDP	Insurance & Reinsurance	...
0.5 percent or 100 to 200 years Above 5 percent of GDP	Catastrophe bonds	Grants & humanitarian aid
Below 0.5 percent or above 200 years Above 5 percent of GDP	Global partnerships exogenous shocks and pandemics	

the disaster. Events of intermediate frequency and severity could be covered by a combination of risk transfer instruments (insurance, catastrophe bonds etc.) and their own resources. Very low-frequency (above 1 in 200 years), very high-damage events are not cost-effective to insure and damage from such events is likely to be coverable only with aid from the international community

## E. Self-Insurance

**10. Small states should try to establish natural disaster financing ahead of time.** Post-disaster increases in public expenditure in the context of economic dislocation, which lead to stagnant or falling revenues, frequently result in the need to contract public debt. At the same time, a significantly reduced debt service capacity could limit the countries' ability to borrow or even

<sup>6</sup> The parliaments of Grenada and Jamaica have passed fiscal responsibility laws that would allow them to strengthen the medium-term fiscal positions. The laws have escape clauses that allow the government to increase expenditure if the country is hit by a hurricane of a predefined severity.

cause them to default on existing debt, as Grenada did in 2008. Countries with high public debt ratios could find it challenging to raise debt in these circumstances. Accordingly, small states should try to create more fiscal space in the form of lower debt levels to facilitate a post-disaster scale up in public expenditure. Still, disbursements would lag post-disaster spending needs despite best efforts of the creditors to respond to an emergency, because the entire process, from application to disbursement, must be completed after the event.

## F. Risk Transfer

**11. Contingent loans and grants could be an indispensable part of small states' disaster safety nets.** Contingent loans like the World Bank Catastrophe deferred drawdown options (CAT DDO) can be fast-disbursing because the loan is pre-approved and ready to disburse ahead of time. This instrument is currently only available for middle income countries, and Seychelles is the only small state that has negotiated one. In a similar vein, Clarke and Dercon (2016) make a strong case for pre-financing humanitarian grants to avoid delays and dislocation following a disaster.

**12. Small states should be willing to pay more than the expected loss to transfer some of their risks through insurance and other financial instruments** (Cummins and Mahul, (2009)). In the face of small states' size disadvantages and in many cases their low capacity, there is a case for assistance from the international community (both technical and possibly financial) to help them find and operationalize risk-transfer mechanisms—which are a logical supplement to current inadequate, and often late, ex-post financing.

**13. Among small states, Seychelles appears be one of the most advanced in adopting an 'optimal' risk-layering financing model.** Preliminary findings from a survey of 12 countries with the most severe disasters among small states suggest that use of risk transfer instruments is in its infancy. Further expansion may be constrained even in the long run by cost and diseconomies of scale. Our current evidence suggests that following options would be possible for Seychelles:

- *Ex post Own financing.* Seychelles' most recent disasters were largely financed by ex post own financing (emergency budget allocations and emergency loans).
- *Ex-ante Own-financing.* Like most other small states, Seychelles provides very little budgetary resources in advance of disasters in the form of dedicated natural disaster contingency or reserve funds. Among small states, only Tuvalu used a reserve fund financing to offset part of its damage from natural disaster and Grenada has established a Hurricane contingency fund under its fiscal responsibility law. Seychelles, however, has a general contingency line in the budget which may be used in the event of a natural disaster.
- *Contingent loans.* Seychelles is the only small state that has accessed contingent loans. It currently subscribes to a World Bank CAT DDO under which it pays a commitment fee for the right to draw down pre-arranged financing if it is struck by a cyclone. Apart from this, Grenada's inclusion of the hurricane clause in its restructured bond is the only instance of a small state with ex ante disaster-related provisions in state-contingent debt.

- *Indemnity Insurance.* Like most small states, Seychelles has traditional indemnity insurance, but its scope is limited. Traditional indemnity insurance is the costliest ex-ante financing options due to high risk premia as well as nascent or non-existing domestic insurance markets. Although Seychelles has some indemnity insurance, especially among state-owned enterprises, it might be useful for the government to consider broader coverage of strategic government assets to facilitate post disaster recovery<sup>7</sup>.
- *Parametric Insurance.* With the assistance of the World Bank, parametric insurance appears to be gaining a foothold, especially in small-state risk-pooling arrangements. These include the CCRIF in the Caribbean, PCRFI in the Pacific island states, Africa Risk Capacity (ARC) in Africa. Parametric insurance costs less and disbursement is faster because payouts are triggered by objective parameters like wind speed and severity of earthquake as measured by Richter scale. This avoids need for costly and time-consuming assessment of the damage, and reduces moral hazard arising from incomplete information. Extension of ARC to Indian Ocean states (Madagascar is already a member) could provide the external benefit of the development of country risk profiles which could be useful for contingency planning and price discovery in insurance markets.
- *Other Financial Instruments.* No small state has yet issued a catastrophe bond: The World Bank issued one to finance CCRIF, the parametric insurance facility for Caribbean countries. The small size of Seychelles limits its ability to access this type of risk transfer.

## G. Monetary Policy and Financial Sector Issues

**14. The destruction of productive capacity in natural disasters creates huge supply shocks and the consequent shortages of food and other necessities can push up inflation for extended periods.** While non-monetary disaster relief could help alleviate shortages the are usually insufficient to offset the shortfalls. In addition, inflows of monetary disaster relief, remittances and insurance payments push up demand for goods and services, while the need for urgent reconstruction of damaged infrastructure, homes and business could force increases wages and raw materials. Accordingly, inflation in general, and more specifically food price inflation can spike. Most studies have treated post disaster food price spikes as a food security issue. While this is valid focus in many instances, post disaster inflation can also be viewed as traditional macroeconomic problem. The usual policy recommendation is to accommodate the first-round effects of a supply shock and offset the second round effects. The policy advice is likely to remain true small to moderate natural disasters where the effects can be offset by conventional monetary policy. However, for large disasters in small states that causes significant dislocation less orthodox measures may have to be employed including temporary price controls and direct efforts to contain the exchange rate depreciation.

---

<sup>7</sup> For example, property damage amounting to about 0.3 percent of GDP caused by cyclone Fantala in 2016 was covered by indemnity insurance held by a state-owned enterprise.

**16. Following a disaster it is important that banks and other elements of the national payments system be up and running with minimum delay.** Hence the central bank should ensure that robust business continuity plans are in place. Moreover, stress testing of banks could include scenarios for more extreme natural disasters to ensure that they would remain viable after a natural disaster. Over the medium term, strengthening financial access through mobile banking and microfinance networks would help to make the financial sector more responsive to the needs of more vulnerable members of the society.

## BLUE ECONOMY DEVELOPMENT PRIORITIES FOR SHARED PROSPERITY IN SEYCHELLES<sup>1</sup>

### A. Current Situation and Policies

**1. Seychelles aspires to make better, and more managed, use of the marine resources that underpin its economy.** Seychelles' economy is based on exploiting its abundant marine natural resources (0). The tourism sector, centered on Seychelles' beaches and ocean-based recreational activities, contributes directly about one quarter of gross valued-added. Tourism's contribution is much greater considering also its indirect contributions, since it also generates additional demand for goods and services from across the wider economy—generating by one estimate over half of GDP expenditures.<sup>2</sup> Tourism is also the primary source of foreign currency earnings. These foreign earnings are complemented mainly by those from two other marine-related sources, arising from Seychelles' strategic location on the tuna migration and shipping routes through the western Indian ocean: exports of tuna, as well as re-exports of oil by its fuel bunkering industry.

<sup>1</sup> Prepared by Alex Sienaert, Luis Alvaro Sanchez, Ben Garnaud (All World Bank).

<sup>2</sup> Current national accounts statistics compilation methods are insufficient to quantify sectors' indirect contributions to total expenditures, but estimates by the World Travel & Tourism Council place tourism's overall GDP and employment contributions at well above 50 percent (WTTC, 2015, "Travel & Tourism: Economic Impact 2015, Seychelles").

<b>Contribution to:</b>	Tourism	Fishing industry	Oil re-exports
<b>GDP</b>	23% (2014)	1.1% (2013; artisanal & semi-industrial only)	n.a.
<b>Including indirect contributions</b>	57% (2014)	8% (2013; (all fisheries-related output)	n.a.
<b>Employment (formal)</b>	19% (2015)	10% (2014; fishermen, fish processing workers, shipping & equipment jobs etc)	n.a.
<b>Exports of goods &amp; services</b>	35% (2015)	22% (2015) (tuna exports)	13% (2015)
<b>Government revenues</b>	34% (2015; directly-attributable taxes)	3% (2015; license fees)	n.a.

Sources: Ministry of Finance, Trade & Economic Planning; National Bureau of Statistics; Seychelles Fisheries Authority; World Travel & Tourism Council

**2. Seychelles supports some of the world's most pristine, diverse and productive marine ecosystems.** Seychelles' large (1.4 million km<sup>2</sup>) marine Exclusive Economic Zone (EEZ) ranks 7<sup>th</sup>/221 on the Ocean Health Index.<sup>3</sup> Most of Seychelles' 115 islands are surrounded by coral reefs. Large sea grass beds exist and are an important nursery for reef fish, invertebrate sea turtles and manatees. Fishing grounds are abundant and include a wide variety of species.

**3. There are growing concerns about sustainability.** No comprehensive evaluation of the impact of current or projected economic activity on the marine environment has yet been made, but in Seychelles, as globally, there are growing concerns about sustainability. In tourism, the government has frozen new approvals for large establishments (with 20 rooms and above) through 2020, reflecting concerns about the impact of the recent rapid pace of development. In the industrial fishing sector, some species are deemed overfished, and the Indian Ocean Tuna Commission (IOTC) has placed an annual ceiling on yellowfin tuna to protect the stock. The IOTC ceiling implies a sharp reduction in Seychelles' quota of the catch. Catch rates of many of the other main species of fish are declining, reflecting pressures from overfishing in the artisanal, recreational and sport fishing sub-sectors, and from an increasing environmental footprint of the tourism industry. The artisanal, recreational and sport fisheries are open-access, which impedes measures to limit the fishing effort and ensure sustainability.

**4. Going forward, Seychelles' marine natural resources will continue to support livelihoods, and can help to generate additional shared prosperity, if preserved.** The challenge for Seychelles is to develop the institutional setup that further develops marine-dependent economic activity, while protecting and enhancing the stock and quality of marine assets. The

<sup>3</sup> <http://www.oceanhealthindex.org/region-scores/scores/seychelles>

opportunity for Seychelles is to consolidate its regional, and even global, leadership status in the management and sustainable use of these resources.

**5. The government is aware of this challenge and opportunity.** A Department of the Blue Economy, situated in the Office of the Vice-President, is preparing a National Blue Economy Roadmap, which will aim to protect and recover ocean ecosystems and biodiversity; ensure that existing ocean industries (e.g. shipping and bunkering) cause minimal environmental impact and meet the highest sustainable practice standards; integrate cross-sectoral spatial planning and implement coastal zone management; increase sustainable use of bio resources (biotechnology, marine ecosystems services); plan for natural disasters and adapt to climate change; increase surveillance of offshore waters; brand Seychelles as a “blue tourism” destination; and, foster knowledge development. These goals are fully aligned with the UN Sustainable Development Goal 14: “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”.

**6. The prospect of hydrocarbon discoveries in Seychelles’ marine territory would pose a particular potential policy challenge, and the country has begun to prepare for this.** The government has encouraged exploration in the EEZ and is working with Mauritius to develop exploration in their Joint Management Zone (JMZ, of 400,000 km<sup>2</sup>). In anticipation of hydrocarbon discoveries and extraction, the state-owned regulator (PetroSeychelles) has revised its Model Petroleum Agreement, complementing provisions in the Petroleum Mining Act and the Petroleum Taxation Act. Seychelles is a candidate country to join the Extractive Industries Transparency Initiative (EITI), to which it has committed to submit its first report in 2017.

## B. Prospects for Seychelles’ Blue Economy to Boost Shared Prosperity

**7. Further development of the blue economy can support shared prosperity.** Three main channels for this can be considered, pointing to the policy levers for making further development pro-poor: direct effects on livelihoods through better jobs and Micro, Small and Medium Enterprise (MSME) development, indirect effects on livelihoods through food supply and macroeconomic effects, and redistribution through the public sector of increased ocean resource rents.

*First, direct poverty reduction and shared prosperity effects through higher earnings in the blue economy will center on the extent to which local labor market participants are able to obtain better jobs, and MSMEs are able to access opportunities, especially in tourism.*

**8. The policy challenge to guide blue economy development for inclusion should be seen in the light of Seychelles’ already services-oriented, full employment economy.** This means that the challenge for the development of the blue economy, and of the private sector more generally, is to equip the local workforce with the skills to participate in supplying higher value-added services, and to ensure that other enabling factors for market work and MSME development are in place (e.g. childcare options, public transport, credit).

**9. In fishing, blue economy measures such as those to sustainably raise the value of artisanal fishing catches can be expected to have a beneficial direct impact on the small share**



**of households which rely on this as their main source of income.** The poverty rate amongst households whose heads work in the primary sector, including fishing, is higher than that of households headed by workers in any other sector: 55.5%, as defined by the national poverty line (2013).<sup>4</sup> However, only about 3 percent of the domestic workforce in Seychelles are recorded as having their main employment in the primary sector. Consequently, the aggregate poverty impact through this direct employment channel will be small.

**10. More important direct employment effects can occur through the tourism industry, which offers a wide range of jobs, including high-earning opportunities, but fills many vacancies from abroad.** Average tourism sector monthly earnings are considerably higher than the national average (Rs. 15,650 vs. Rs. 9,544)<sup>5</sup> consistent with strong derived labor demand growth from what in recent years has been a fast-growing sector. Yet, the high sector average masks significant earnings dispersion, including a wide gap between male and female wages.<sup>6</sup> There is a range of jobs in the industry, including many which are less desirable because of heavy manual workloads and difficult hours. A predominant share of the increased labor demand generated by the growth of the tourism industry has been met by importing foreign workers. Total recorded employment in tourism was about 9,000 in 2015, while the number of new and renewed temporary expatriate worker permits (Gainful Occupation Permits, GOPs) issued for tourism was 3,081 in 2015, rising to 4,028 in 2016.<sup>7</sup>

**11. Opportunities for small businesses in the blue economy, for example to provide ancillary services in the fisheries and tourism sectors, could be expanded.** Enterprise survey data are lacking but there is a concern that the market structure of the tourism sector discourages competition, despite a range of government programs to support MSMEs, such as the provision of credit guarantees. The market share and vertical integration of the main operators are high, likely limiting opportunities for small-scale providers of goods and services for tourists. Coupled with the limited pool of local start-up knowledge and capital, and skills, the result has been limited innovation and a largely undifferentiated offering of accommodation, transport, retail and excursion options by small-scale providers. Overall, the existing industry model has been successful in developing the tourist sector over the past two decades. The time now looks ripe, however, for fresh analysis of the approach, and especially for the identification of potential measures to reduce barriers to entry, and stimulate competition and innovation. This need is reinforced by the fast pace of change and innovation in tourism globally, and the emergence of new competitors to Seychelles,

---

<sup>4</sup> The national poverty line defines poverty expansively compared with poverty lines developed for the purposes of international poverty comparisons.

<sup>5</sup> As of 2015. Source: NBS, "Seychelles in Figures", 2016.

<sup>6</sup> Unconditional difference in average earnings of 128 percent in the 2011 LFS. Source: World Bank, Seychelles Labor Market study (forthcoming).

<sup>7</sup> Official statistics Providing a Consolidate picture of the sectoral labor force (combining local and expatriate workers) are not available sources: official employment: NBS, 2016, "Seychelles in Figures"; GOPs: Ministry of Home Affairs.

*Second, further blue economy development can support shared prosperity through its food security, living cost and macroeconomic effects.*

**12. Seychellois have one of the highest levels of fish consumption per capita in the world, approximately 57 kg per annum, with fisheries products accounting for up to 50% of the total protein consumed.** Most of this is supplied by Seychelles' artisanal fishery, which lands about 4,000 tons of fish per year. This fishery is largely limited to catching the bottom-dwelling (demersal) fish inhabiting the Mahé Plateau, an area of around 41,000 km<sup>2</sup> up to approximately 50m deep that surrounds the central islands and population centers. The plateau is fished by 140 whalers and schooners and at least 400 outboard vessels, as well as sport and recreational fishing boats. These vessels go to sea for a day to a week and use hook and line, and traps. The continued sustainability of this demersal fishery is critical to food security in Seychelles. Were the local supply to deteriorate and prices to rise, poorer households would be hardest hit, as they spend the greatest share of their income on food, including fish. Food items constitute just under 16 percent of the Consumer Price Index. One survey, albeit now dated (2011), found at that time that about one fifth of households did not have the ability to buy sufficient meat and fish.<sup>8</sup>

**13. In addition to securing the domestic fish supply for food, further sustainable development of the blue economy would strengthen Seychelles' external balances and support macroeconomic resilience.** This would operate, first, through reduced food import demand, an import substitution effect which with further development of sustainable seafood production could be significant, as Seychelles imports about US\$70m worth of food annually, constituting 9% of total goods imports, including to supply hotels<sup>9</sup>. Second, increased export-oriented production of maritime products (e.g. crab, sea cucumber, seaweed, shrimp, and sponge-based biotech products), including through mariculture, could raise and diversify foreign currency earnings which are currently highly concentrated on tourism and tuna sales. In all cases, ensuring environmental sustainability will be critical, requiring appropriate regulations and enforcement capability to be in place, and, in light of Seychelles' delicate and pristine ecology, likely meaning that production would need to be oriented to small, high value products supplied into the local tourism industry or to niche international markets.

*Third, a larger blue economy can support public revenues, to the benefit of the poorest depending on the allocation and quality of public spending.*

**14. Seychelles' high economic dependence on its abundant marine natural resources places into focus not only the preservation of these resources (i.e. sustainability), but also how the benefits from their use are shared.** Government revenues and absorption of total expenditures are already relatively high, averaging 34% and 37% of GDP over 2011-2016, respectively.<sup>10</sup>The tourism sector contributes directly about one third of total taxes. As the blue

<sup>8</sup> Muller, C., 2011, Living Conditions Survey (2011) and Poverty Digest, NBS.

<sup>9</sup> Source: Calculations based on CBS data for 2016. Figures exclude tuna imports for re-export.

<sup>10</sup> Includes preliminary estimates for 2016, IMF.

economy develops further and contributes more taxation revenues, the incidence of fiscal policy will change, and will need to be assessed and, if merited, adjusted. This, and a continued focus on raising the quality of public service provision, can help ensure that Seychelles' blue economy not only drives economic growth, but increases shared prosperity.

### C. Policies Priorities for Seychelles' Blue Economy to Drive Shared Prosperity

**15. The blue economy is a conceptual framework that encapsulates much of the existing economic activity in Seychelles, which is already marine-oriented, but places a new public policy emphasis on managing and ensuring the sustainability of the resources, and deepening the economic value that they provide.**

**16. The first prerequisite for this inclusive growth strategy to work is to strengthen the evidence base for policy reform and implementation.** Examples include the need for improved satellite accounts for both tourism (where visitor spending figures are currently unreliable), and fisheries (where beyond estimation of the landed catch, large parts of the value chains for non-tuna fisheries lack systematic data collection, and there is little statistical capture of charter sport and recreational fisheries). These data could be used to apply analytical techniques such as the adjusted net savings approach to determine the sustainability with respect to preserving natural capital of Seychelles' growth path. Investment in more regular, standardized household surveys (including of the subset of households whose livelihoods depend on fishing), and enterprise surveys, would also shed light on inclusiveness.

**17. Second, planning, and regulatory requirements and enforcement, need to be further developed and streamlined.** Coordination with relevant sector plans and regulatory bodies will be required due to the fundamentally multi-sectoral nature of the blue economy. In particular, Seychelles' blue economy development strategy will need to be integrated with sectoral and national policy planning frameworks, including for sustainable development (land-focused, in the Ministry of Environment, Energy and Climate Change) and overall national development strategy (in the Ministry of Finance, Trade and Economic Planning). Regularity, clarity and consistency would support private sector investment (including in potentially high-returning, but unproven and hence riskier, projects), and are needed to ensure fair, transparent access to the benefits from further development of the blue economy.

**18. Finally, making Seychelles' further blue economy-based growth trajectory inclusive requires that local labor force participants are able to obtain the skills they need to access new, higher-earning opportunities in the sector, addressing general challenges to small business development (such as the high cost of credit), and, in the public sector, calibrating fiscal incidence to an evolving revenue base, while continuing to strengthen the quality of public services.**

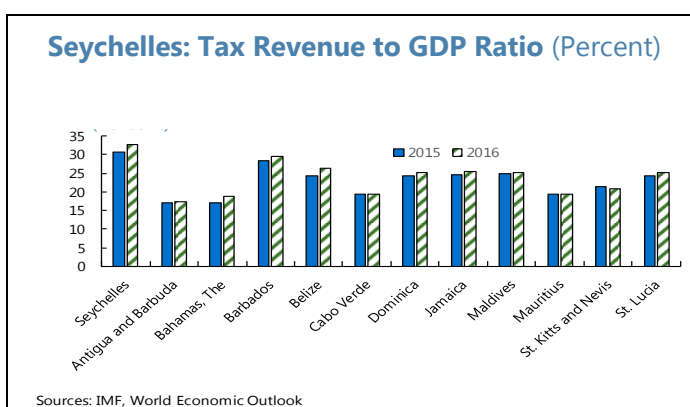
## POSSIBLE OPTIONS TO BUTTRESS THE AUTHORITIES' MEDIUM-TERM DEBT TARGET<sup>1</sup>

*In order to shore up the medium-term debt target, the authorities would need to articulate a set of permanent fiscal measures to be implemented in 2018. By eliminating preferential business tax treatment for tourism companies and introducing revenue measures which have been under discussions, including rationalization of fuel taxes and introduction of sugar tax, the authorities could fill up the estimated fiscal gap in 2018. There is scope to further streamline public sector wage bill and better target social welfare spending.*

### A. Context

**1. After several years of impressive fiscal consolidation, social concerns led to fiscal policy slippages in 2016.** Seychelles has recorded significant primary fiscal surpluses for eight consecutive years since 2009 while enjoying strong economic growth during the period. As a result, the public debt to GDP ratio has been reduced by almost two thirds between 2008 and 2015.

However, the Household Budget Survey (HBS) published in late 2015 indicated wide spread poverty, causing social concerns about inequality. Then-President Michael announced a series of fiscal commitments in his State of the Nation Address (SONA) in early 2016, which are estimated to cost 3 percent of GDP annually.<sup>2</sup> The authorities are committed to reducing the public debt to GDP ratio below 50 percent by 2020, which would require a primary surplus of 3 percent of GDP each year from 2017 onwards. While the 2017 budget is in line with this primary surplus target, it largely relies on one-off measures to fill the fiscal gap created by the 2016 SONA.



**2. After the one-off measures in the 2017 budget expire, the authorities would need to implement significant amount of permanent fiscal measures in 2018.** If no additional measures are taken in a 2018 budget, the authorities will face a fiscal gap of about 1½ percent of GDP from 2018 onward compared with the primary surplus targeted at 3 percent of GDP. This chapter explores possible options, both on the revenue and expenditure sides, to fill this gap by permanent

<sup>1</sup> Prepared by Tetsuya Konuki (AFR)

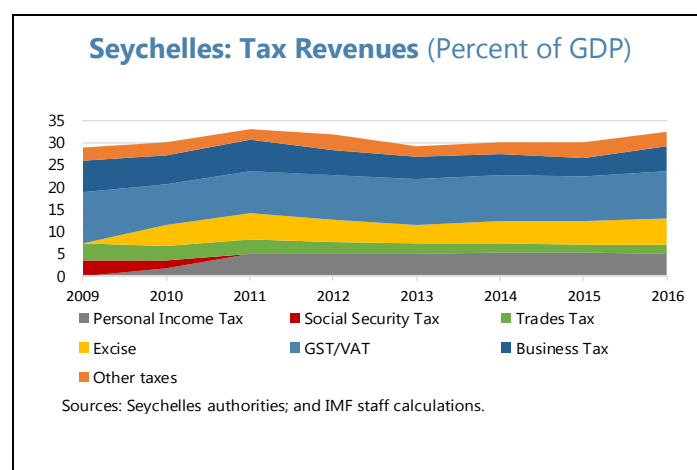
<sup>2</sup> See Box Country Report No 17/51

measures. It refers to the trends in Seychelles revenue and expenditure, in comparison with a peer group, and the discussions held during the 4<sup>th</sup> and 5<sup>th</sup> EFF reviews.

## B. Revenue Side

**3. While Seychelles' tax revenue to GDP ratio compares favorably with peer countries, business taxes have shown less favorable trends.** Seychelles collected more tax revenues, in percent of GDP, compared with other tourism-dependent island economies (*see text chart*). However, this overall picture masks some less favorable trends. Business taxes to GDP ratio has been hovering 4¼–5½ percent since it peaked at 7.1 percent in 2011 (*see text chart*). Business taxes are relatively narrow based in Seychelles, with 30 companies accounting for over two-thirds of tax business collections. In particular, tourism-related companies' share in total business tax collections hovered around 7¾–10¼ percent during 2011–15. This is a significant underrepresentation, compared with their share of 25–34 percent in personal income tax and VAT, which broadly matches with the tourism industry's GDP contribution. While transfer pricing by international hotel chains seem to play a role, preferential treatment, including preferential rate and high deductions from business income could explain this low business tax contribution from the tourism-related companies.

**4. By eliminating the preferential rate and other preferential treatments on business tax for tourism companies, Seychelles could significantly enhance tax revenues.** Tourism-related companies are subject to the business tax rate of 15 percent, against 30–33 percent applied to other companies. Furthermore, the Tourism Investment Acts provides various business tax concessions including: (i) accelerated and additional depreciation for investments; (ii) 200 percent bonus deduction on marketing and promotion expenses up to 5 percent of turnover; and (iii) extra deduction for training expenses and salaries paid for one year to qualified graduates. The 2016 FAD TA mission pointed out that, the revenue loss of these preferences and the lower business tax rate of the 24 sample companies was estimated at 0.6 of GDP



**5. While many tourism-dependent economies implement various tax incentives, recent empirical research indicates that tax incentives may affect FDI but their ultimate economic benefits may be limited.**

Klemm and Van Prays (2009) find that, while lower corporate income tax rates and longer tax holidays are effective in attracting FDI, these policy instruments are not effective in boosting total investment or economic growth, based on a dataset on tax incentives in over 40 Latin American, Caribbean, and African

countries for the period 1985–2004. This would suggest that either that FDI crowds out domestic investment or that these instruments affect mainly ownership transfers, which are part of FDI but not that of the total domestic investment.<sup>3</sup>

**Seychelles: Revenue measures discussed with the mission but not introduced in the 2017 budget**

	Revenue impact (in percent of GDP)
Increase fuel excises in line with FAD TA recommendations	0.50
Increase yacht fees	0.05
Increase passenger air duty from \$10 to \$15	0.10
Impose 10 percent tax on sugary drinks and confectionary	0.10
<b>Total</b>	<b>0.75</b>

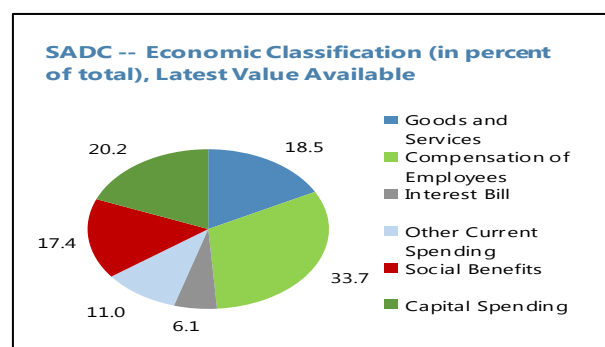
Source: Ministry of Finance and staff estimates

**6. The authorities could examine the list of possible revenue enhancing measures discussed with the Fund mission in 2016.**

In the context of the 4<sup>th</sup> and 5<sup>th</sup> EFF reviews, the authorities discussed with the Fund staff

potential revenue enhancing measures to fill the gap in 2017 onwards. Text table below is the list of the measures discussed but not incorporated in the 2017 budget. These measures could create additional revenue of around  $\frac{3}{4}$  percent of GDP (see *text table*).<sup>4</sup> In particular, the fuel excise increase would raise the revenue take by about  $\frac{1}{2}$  percent of GDP and contribute to the authorities' efforts to

reduce carbon emission in accordance with Nationally Determined Contribution (NDC) under the United Nations Framework Convention on Climate Change (UNFCCC).



<sup>3</sup> Other relevant research on this issue include Klemm (IMF WP/09/21, 2009) and Abbas, Klemm, Bedi, and Park (IMF WP/12/28, 2012).

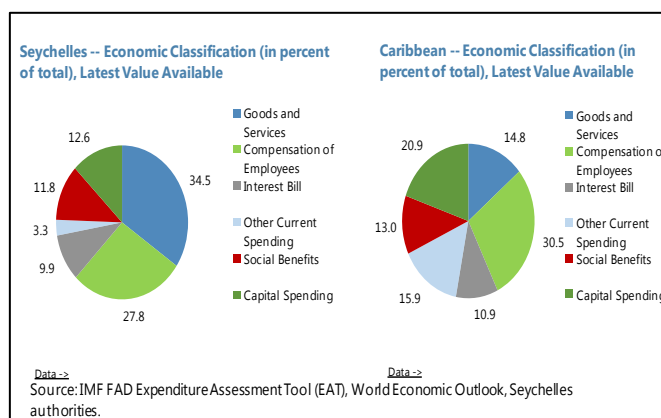
<sup>4</sup> In addition to the measures listed in the text table, the authorities are currently articulating specifics of a property tax to be introduced in the 2018 budget and increases in various fees.

## C. Expenditure Side

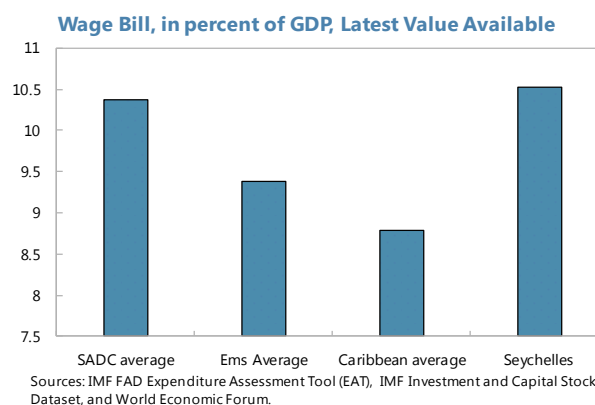
### 7. Seychelles' government expenditure composition is skewed toward current spending compared with peer countries.

In this section, Seychelles' government spending composition, level of major spending items, and efficiency of key social spending are benchmarked against Caribbean countries and Southern African Development Community (SADC) members.<sup>5</sup> These countries are chosen as Seychelles' peer group because the former includes most of the tourism-dependent small economies and the latter includes most of the small middle-income countries

(SMICs) in SSA.<sup>6</sup> Capital spending's share in total spending is 12¾ percent in Seychelles, while this share slightly exceeds 20 percent on average among Caribbean countries and SADC members (see *text chart*). Meanwhile, the share of wage bill and goods and services in total spending exceeds 60 percent in Seychelles, higher than that in the peer countries. In view of the authorities' priority investment needs in water, sewage, and electricity, expressed in the Public Utilities Company's (PUC's) ambitious capital spending plan for 2017–20,<sup>7</sup> as well as climate change mitigation and adaptation investments over the long term, the share of capital spending should increase in the medium to long term. In this context, keeping a firm grip on current spending, particularly on wage bill and goods and services, will be essential.



**8. The government could tighten the rein on wage bill: its expenditure is higher compared with majority of the peer countries.** Seychelles spends 10½ percent of GDP on compensation, which is higher than most of the Caribbean countries and the SADC members on average. Meanwhile, wage bill to GDP ratio is envisaged to reach 11 percent of GDP in the 2017 budget from around 9½ percent in 2015.<sup>8</sup>



<sup>5</sup> All cross-country charts in this section are based on the data in the WEO and IMF FAD's Expenditure Assessment Tool (EAT).

<sup>6</sup> SMICs in SSA includes Botswana, Cabo Verde, Lesotho, Mauritius, Namibia, Seychelles, and Swaziland. Except for Cabo Verde, all of these countries are the members of SADC.

<sup>7</sup> Much of the investment program of the PUC is supported by on-lending from the government.

<sup>8</sup> The rise in the wage bill to GDP ratio since 2015 is partly explained by the introduction of the 13<sup>th</sup> month salary.



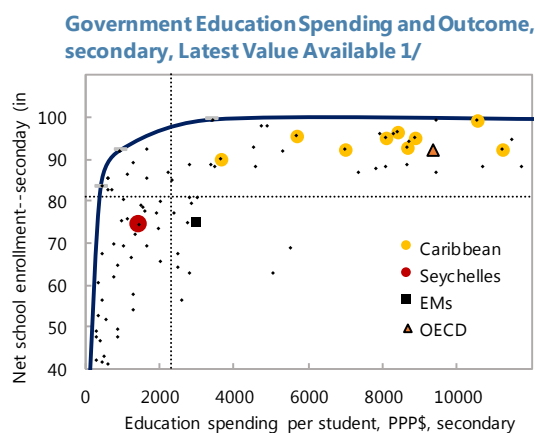
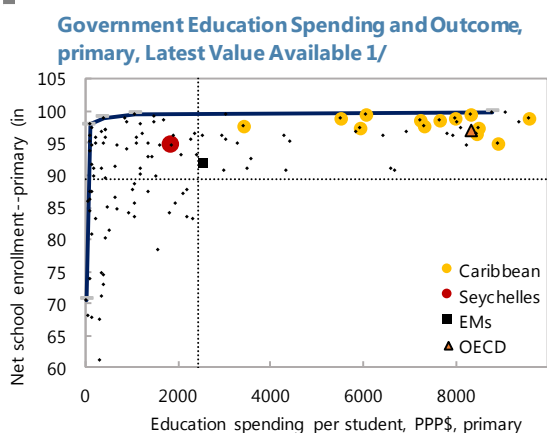
Here could be scope to streamline salary costs in the public sector, for instance by more efficient use of personnel or greater use of technology, as the cross-country spending efficiency analysis in the education sector implies (see ¶10).

### 9. The government could create savings by better targeting the social welfare spending.

While Seychelles spends about 4½ percent of GDP on social protection, the current social protection system supports households that are not needy, while most households in need do not get assistance.<sup>9</sup> Eligibility criteria create inequities through a complex system of exclusions, deductions, and cost sharing arrangements. There would be room to create savings over the medium term by implementing recommendations proposed in the Social Protection Policy Note by the World Bank (June 2016), including review and adjustment of means test and benefit level of home care program and social welfare assistance.

### 10. There is scope to improve the efficiency of education spending in Seychelles.

To measure the efficiency of education spending, we use the data envelopment analysis (DEA) approach. This approach allows the relative efficiency of a country in translating public spending (inputs) into measurable outcomes (outputs). Based on the input-output data of countries that maximize output for a given level of inputs, or minimize the use of inputs for a given output level, the “efficient frontier” is estimated. Then countries are ranked according to the distance from the frontier: the closer a country is to the frontier, the more efficient is its spending.<sup>10</sup> For a given country, the distance to the frontier is the output increase that could be achieved with the same inputs should the country be at the efficiency frontier, or the reduction of inputs that could be achieved while leaving output unchanged. In the text charts below, primary and secondary education spending is used as inputs while net enrollment ratio as outputs. The charts indicate that Seychelles does not compare favorably with many Caribbean countries, whose per-capita income level and geographic characteristics are similar to Seychelles.<sup>11</sup> The World Bank’s Public Expenditure



<sup>9</sup> See the Social Protection Policy Note (World Bank, 2016).

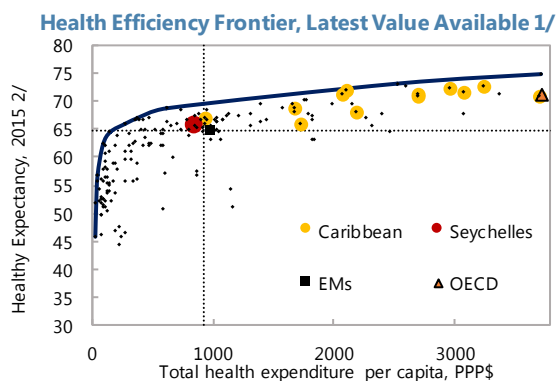
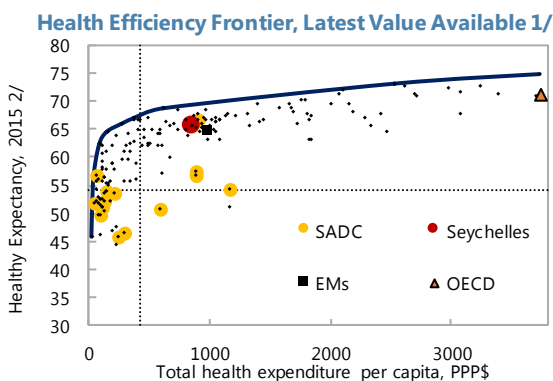
<sup>10</sup> For a discussion on efficiency frontier approach, see Grigoli and Kaplosi (2013).

<sup>11</sup> The World Bank’s Public Expenditure Review in 2014 pointed out that internationally comparable test scores in Seychelles are unfavorable compared with other middle-income countries and peers in the region (Kenya, Mauritius, and Tanzania).



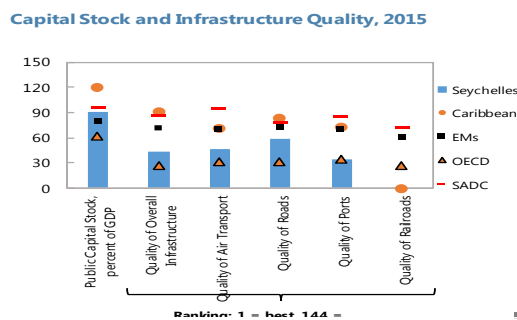
Review in 2014 found that salary costs accounted for over 90 percent of all education costs, leaving little for other vital spending such as learning materials. The government could find a way to restrain personnel costs across the public sector.

**11. While Seychelles is the top performer in the SSA in terms of health outcomes, there could be room to further enhance the outcome while creating fiscal savings.** The World Bank’s Public Expenditure Review in 2014 pointed out that Seychelles is the top performer in Africa for health outcomes and its health indicators compared favorably with even some OECD countries. However, these impressive results could be further improved while making some fiscal savings. We conducted efficiency frontier analysis, like those applied to the education spending, using health-adjusted life expectancy as output and health spending as input. As the text charts below indicates, some SADC countries, as well as many Caribbean countries, scores better than Seychelles in the efficiency of health spending: these countries are located closer to the frontier. Both the country’s already impressive health outcomes and the fiscal balance could be further improved, for instance, by introducing sugar tax, which is under consideration by the government: sugar tax would help boost the revenue while it would help improve the health condition of the population.



Source: IMF FAD Expenditure Assessment Tool (EAT)

**12. Despite the smaller share of capital spending in the total government spending, quality of public infrastructure in Seychelles compares favorably with its peers.** The quality of major infrastructure (airports, ports, roads) ranks better than the peer countries (see text chart). Seychelles rank favorably in terms of stock (quantity) of physical infrastructure, too. Given that Seychelles allocates smaller share of total expenditure to capital spending, this outcome is impressive. However, the Public Expenditure and Financial Accountability (PEFA) assessment completed in late 2016 indicates that the authorities could further improve the efficiency and quality of public investments. While necessary institutions, including Development Committees and Public Sector Investment Plan, have been in place and the Public Investment



Source: IMF FAD Expenditure Assessment Tool (EAT)

Manual (PIM) has been adopted, the PEFA report highlights significant challenges towards a full compliance with the PIM. The report points out some weaknesses in project selection, costing, and monitoring. Capacity enhancement in these areas, as well as efficient use of PPPs, would help create space for the authorities' priority investments in electricity, sewage, and water projects, as well as climate change and adaptation investments in the medium term.

## EXTERNAL STABILITY AND COMPETITIVENESS ASSESSMENT<sup>1</sup>

*Seychelles' exchange rate appears broadly in line with fundamentals. Although the formal quantitative analysis did not provide a definitive exchange rate assessment, other indicators point to a relatively strong external sector. Nevertheless, the authorities need to arrest recent appreciation in the REER before it poses a risk to the external stability.*

### A. Real Exchange Rate Assessment

**1. The real exchange rate assessment based on EBA-lite approach produced mixed results.** The current account (CA) model suggests a real exchange rate gap of +22.1 percent (implying sizable overvaluation of the rupee) with a large residual of -21.3 percent. On the other hand, the real effective exchange rate index (IREER) model estimates a real exchange rate gap of -13 percent (i.e. undervaluation of the rupee) with a residual of -17 percent. These discrepancies are largely explained by country-specific circumstances.<sup>2</sup> In this context, the limitations of the approach are also reflected in a persistently poor fit of the panel estimation for small, tourism-based countries such as Seychelles.

<b>EBA-lite Results</b>			
<b>CA Model</b>			
CA-Actual	-0.19	CA-Fitted	0.03
CA-Norm	0.00	Residual	-0.21
CA-Gap	-0.19	Policy gap	0.03
Elasticity	-0.85		
Real Exchange Rate Gap	0.22	Cyclical Contributions	-0.01
		Cyclically adjusted CA	-0.18
		Cyclically adjusted CA Norm	0.01
<b>IREER Model</b>			
ln(REER)-Actual	4.76	ln(REER)-Fitted	4.94
ln(REER)-Norm	4.89	Residual	-0.17
REER-Gap	-0.13	Policy gap	0.04
Sources: Fund staff estimates			

<sup>1</sup> Prepared by Aidar Abdichev (AFR).

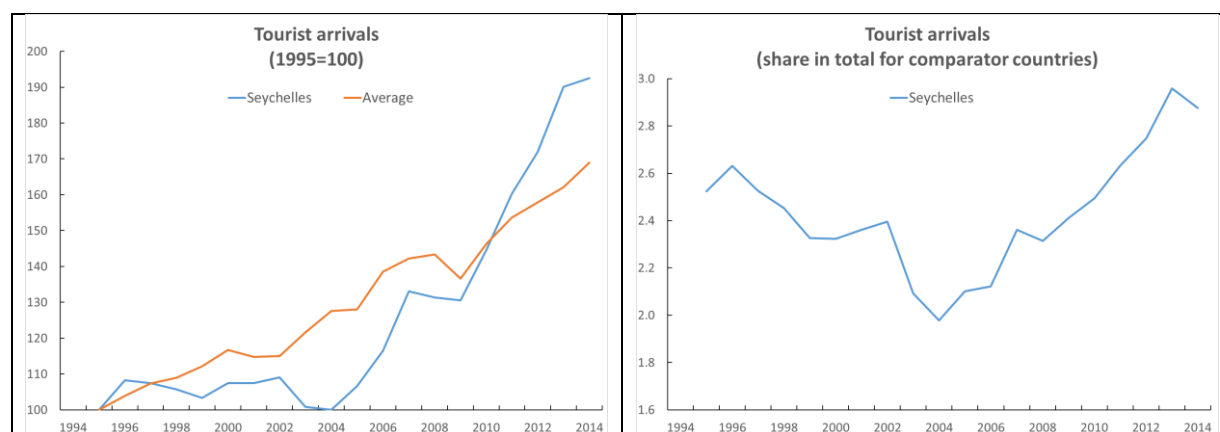
<sup>2</sup> Ter-Martirosyan, A et al. External Assessments in Special Circumstances, IMF, 2014

## 2. Seychelles is an economy highly reliant on a single sector (tourism) for foreign income.

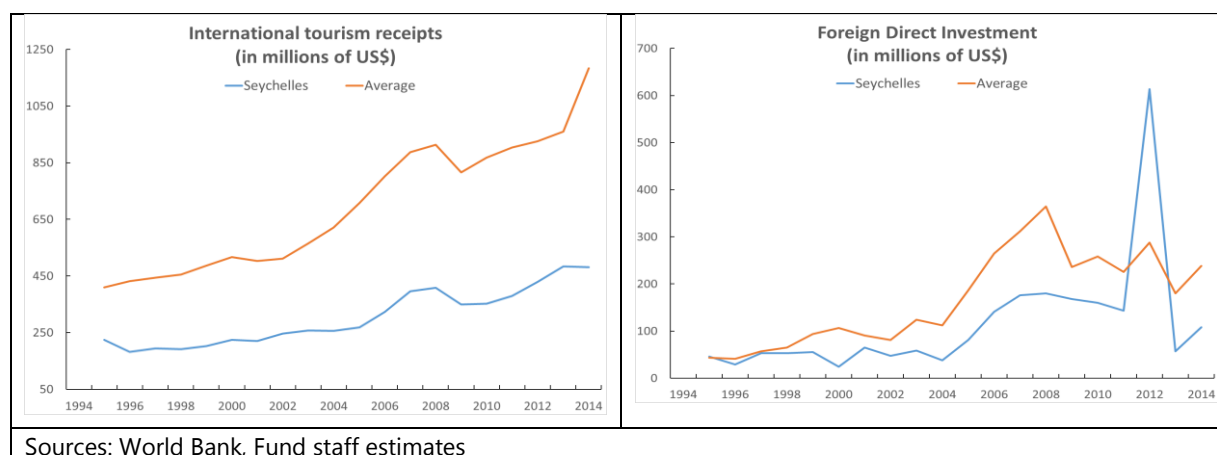
With the tourism-related sectors accounting for 32 percent of GDP and tourism earnings accounting for 30 percent of total exports of goods and services, Seychelles is way above the thresholds set for special cases for external assessments (15 percent of GDP and 25 percent of total exports, respectively). Traditional model coefficients do not sufficiently reflect the fact that the country has a concentrated source of external income (tourism). For example, sizeable capital inflows (FDIs) could further lower the current account balance due to large imports associated with these investments. This suggests going beyond quantitative point estimates by using alternative indicators and narrowing down the sample of countries for comparisons. To complement the formal quantitative analysis, a qualitative approach is also applied by comparing Seychelles to a group of structurally similar countries (small island economies dependent on tourism<sup>3</sup>) across other characteristics of external competitiveness.

## B. Other Indicators of Competitiveness

**3. The tourism sector has been performing strongly.** Since 2009, Seychelles has experienced stronger growth in tourist arrivals relative to average of the comparator group and its share in the group total has steadily increased. On the other hand, the international tourism receipts have not been growing as fast, although they followed the same path as the group in general. The slower growth in tourism receipts is related to the depreciation of the euro relative the US dollar as the bulk of tourism receipts are denominated in euro. Foreign direct investment (inward) largely followed a similar pattern as other countries, with the exception of a large one-off investment in 2012. Since 2014, the authorities have imposed a moratorium on new large hotel investments.



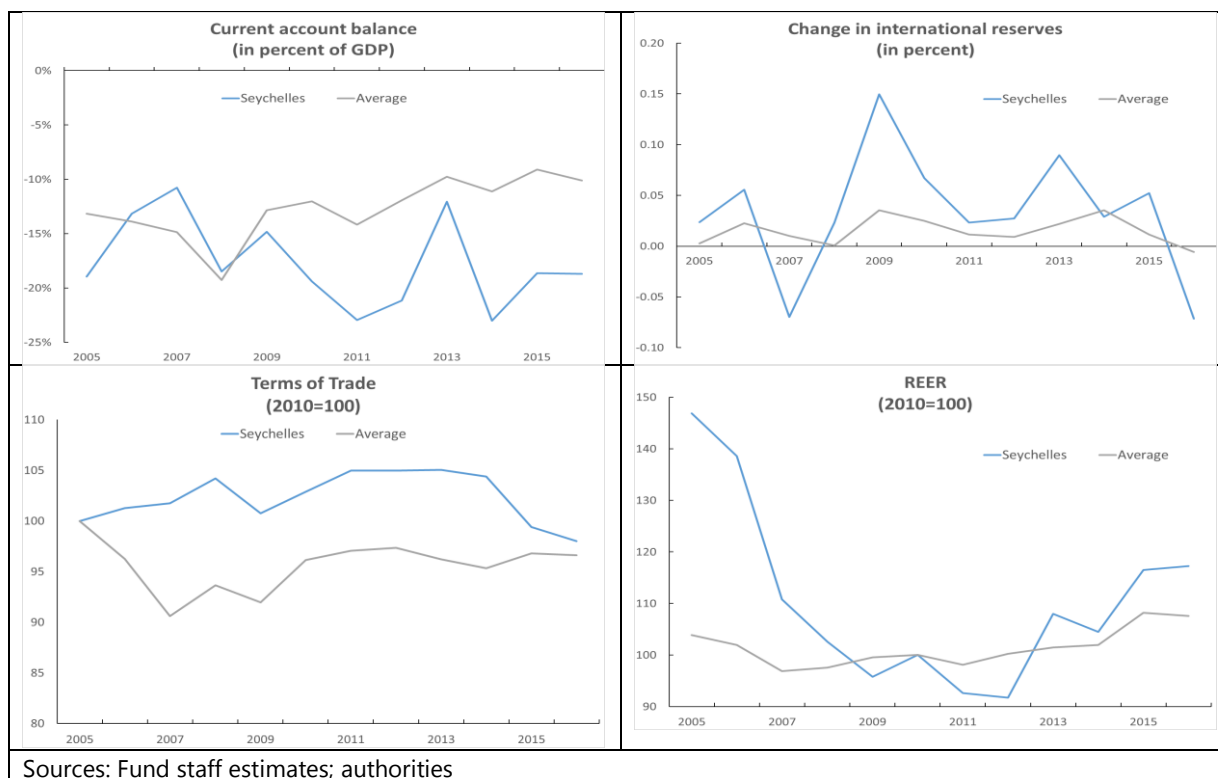
<sup>3</sup> Antigua and Barbuda, Bahamas, Barbados, Belize, Cabo Verde, Dominica, Jamaica, Maldives, Mauritius, St. Kitts and Nevis, and St. Lucia.



**4. The real effective exchange rate (REER) has been appreciating since end 2014, following a sharp depreciation.** However, the pace slowed starting in [March 2016], reflecting negative domestic inflation. Still, over the past two years the real effective exchange rate has appreciated somewhat faster compared to the average of the group of comparator countries. The current level of the REER is around 13 percent higher than the average during the first 5 years under the program. Continued appreciation of the REER could pose risks to the country's competitiveness in the context of an already large external current account deficit.

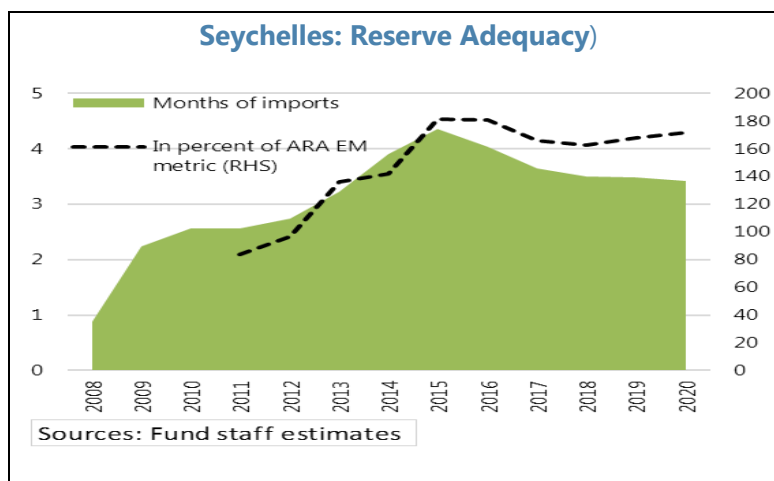
**5. Other indicators show mixed results in external competitiveness relative to similar economies.** In recent years, although the current account position compared to the comparator group has been weaker, Seychelles' pace of accumulation of international reserves has been faster except for the last year when significant depletion occurred with the commencement of amortization of a restructured bond. The indicators of relative prices show that Seychelles has slightly lost competitiveness relative to its peers as the terms of trade indicator shows a deterioration over the past two years.

**6. There has been limited progress in improving the business environment.** Seychelles fell from 80<sup>th</sup> to 93<sup>rd</sup> in the rankings for the World Bank's Doing Business overall indicator over the past three years. Particular areas of concern remain starting a business, dealing with construction permits, access to electricity and finance, and enforcing contracts. All these indicators have deteriorated and rank in mid-100s among 190. Among few indicators that recorded an improvement were paying taxes (32) and trading across borders (84).



### C. Reserve Adequacy

**7. International reserves are expected to remain strong.** After a decline in 2016 from above 4 months of imports, the reserves will stay stable around 3½ months. Based on the Assessment of Reserve Adequacy for Emerging Market (ARA-EM), this level appears to be adequate, with the projected reserves staying at around 170 percent of the ARA-EM metric. The need for additional reserves well above the metric is justified by the increasing vulnerability of Seychelles' tourism economy to natural disasters and climate change.



# ASSESSING THE EFFECTIVENESS OF MONETARY TRANSMISSION IN SEYCHELLES<sup>1</sup>

*This note empirically assesses the effectiveness of monetary transmission mechanisms in Seychelles. Using a structural VAR model, we find that monetary transmission mechanisms are generally weak and that the results may reflect inefficiencies of the current monetary framework. This chapter is organized as follows: Section I describes the theoretical background underlying a monetary policy framework in the context of a small open-economy with flexible exchange rates. Section II presents the empirical analysis. Section III concludes and provides policy recommendations.*

## A. Theoretical Background

**1. The Mundell-Fleming model shows that under a fixed exchange rate regime with perfect capital mobility, monetary policy is limited as a stabilization tool.** In a small open economy facing perfect capital mobility with fixed exchange rates, fiscal policy is expected to be highly effective in moving aggregate demand while monetary policy is limited. Indeed, an expansionary fiscal policy translating into higher government spending would lead to higher interest rates and appreciation pressures, forcing the Central Bank to intervene by purchasing foreign currency using domestic funds, increasing money supply and ultimately resulting in higher output. In the case of an expansionary monetary policy, an increase in money supply results in a decrease in interest rate, leading to depreciation pressures, and ultimately forcing the Central Bank to intervene in the foreign exchange market in order to maintain the peg, consequently impacting neither interest rate nor output level.

**2. However, under a floating exchange rate regime and perfect capital mobility, the model shows that monetary policy is the most efficient stabilization tool.** In a small open economy facing perfect capital mobility with flexible exchange rates, monetary policy is expected to be more effective in moving aggregate demand while fiscal policy has limited efficacy. Indeed, an expansionary fiscal policy would lead to higher interest rates and appreciation pressures, reducing net exports which ultimately offset the initial stimulus with no resulting change in output. In the case of an expansionary monetary policy, an increase in money supply would result in a decrease in interest rate, leading to depreciation pressures which ultimately stimulate net exports and increase output.

**3. As a small open economy with flexible exchange rates, Seychelles provides an interesting framework to assess the effectiveness of the monetary transmission mechanism.** The Central Bank of Seychelles (CBS) has adopted a reserve money targeting framework since the inception of an IMF-supported economic reform program in November 2008. The change from exchange rate targeting was put in place in view of supporting the liberalization of the foreign exchange market and a floating exchange rate regime<sup>2</sup>, which led to the removal of administrative

<sup>1</sup> By Wendell Samuel and Arina Viseth. This note is part of a chapter of a forthcoming book on monetary transmission in small states.

<sup>2</sup> The float of the exchange rate and elimination of exchange controls follow the restructuring of external debt.

exchange controls and free access to foreign exchange. This framework has called for appropriate monetary policy interventions to ensure exchange rate stability<sup>3</sup>. Seychelles is currently among the very few small states whose exchange rate regime is classified as flexible both de jure and de facto<sup>4</sup>.

## B. Channels of Transmission

### 4. We examine Seychelles' channels of monetary transmission mainly through four channels<sup>5</sup>: money, interest rate, exchange rate, and credit channels.

**Money channel.** This channel assumes changes in reserve money are transmitted to broad money via the money multiplier. Because individuals hold components of broad money, currency in circulation, and various forms of deposits for transaction purposes, changes in money balances affect aggregate demand, leading to changes in prices and output.

- **Interest rate channel.** This is the traditional channel of monetary transmission, where increases in money supply reduce interest rates, stimulating investment spending and output. Because monetary policy can only affect short-term nominal interest rates, the impact of monetary policy on spending decisions assumes that prices are sticky and long-run real interest rates depend on short-run real interest rates.
- **Exchange rate channel.** The exchange rate channel is based on the uncovered interest rate parity condition. It assumes that differences between domestic and foreign returns drives exchange rates, affecting the country's net exports and aggregate demand. This channel is especially important in small open economies.
- **Credit channel.** The credit channel focuses on the existence of asymmetric information in financial markets which result in banks imposing an external finance premium on borrowers, affecting the supply of credit and aggregate demand. In this channel, a reduction in money supply increases the external finance premium faced by borrowers, reducing the supply of credit and output. The credit channel is composed of the bank-lending channel and the balance-sheet channel. The bank-lending channel assumes that an increase in the external finance premium arises because monetary contraction has deteriorated the quality of loans. The balance-sheet channel assumes that an increase in the external finance premium arises because monetary contraction has reduced the net worth of the private sector.

### 5. However, unstable money multiplier and velocity can affect the effectiveness of the monetary transmission mechanism.

The monetary transmission mechanism requires that changes in reserve money affect money supply, and changes in money supply affect output and price. However, an unstable money multiplier (transmitting changes in reserve money into changes in

<sup>3</sup> For example, in the last quarter of 2008 so as to stimulate capital inflows and support the exchange rate. Weekly auctions for a liquidity deposit facility at the Central Bank were introduced and weekly T-bill auctions were open to all. The sales of T-bills contributed to liquidity sterilization and exchange rate stability.

<sup>4</sup> Classification based on AREAER 2016.

<sup>5</sup> Two more channels exist - the asset price and expectation channels – but due to data availability, they are not discussed here.

money supply) or velocity (affecting the link between money supply and output) would make those relationships unpredictable.

### C. Assessing the Efficiency of Monetary Transmission Mechanisms: An Empirical Analysis

**6. To assess the efficiency of monetary transmission mechanisms, we follow the widely used structural VAR methodology.** In order to measure the effect of monetary policy, we need to identify purely exogenous shocks to the variables of interest and see how the economy reacts to them. The advantage of a VAR is that it isolates purely exogenous shocks to monetary policy and allows tracing out the dynamics of the variables after the shocks hit the economy. For these reasons, VARs and its variant has been the most common approach adopted in the monetary transmission mechanisms (MTM) literature, both in the context of developing as well as of developed countries. Studies of MTM in developed countries have commonly used VARs and its variants (Christiano, Eichenbaum and Evans, 1999, Boivin, Kiley and Mishkin 2011 for the US; Weber, Gerke, and Worms, 2009 for the euro area). Most studies of MTM in LICs have also used VARs (Mishra, Montiel and Spilimbergo, 2010, Mishra and Montiel, 2012).

Formally, the structural VAR model is as follow:

$$AX_t = \beta_0 + \beta_n X_{t-n} + \lambda Y_t + u_t \quad (1)$$

Where  $t = 1, \dots, T$

$X_t$  is a vector of endogenous time series variables, contains the intercept, time trend and other deterministic terms,

$Y_t$  is a vector of contemporaneous exogenous variables

$u_t$  are independent structural shocks

We assume the following endogenous and exogenous variables<sup>6</sup>:

- Endogenous variables: real GDP (y), price level (p), reserve money (m), policy rate (r), credit to the private sector (c), and nominal effective exchange rate (e).
- Exogenous variables: global oil price index, global food price index, the US federal funds rate, and US industrial production. These variables are assumed to be proxies for global demand.

The structural VAR cannot be estimated directly, but its reduced form can. In order to get the reduced form, we multiply the structural model by the inverse of matrix A.

Multiplying (1) by the inverse of matrix A. we get the reduced-form VAR:

$$X_t = G_0 + G_1 X_{t-n} + e_t \quad (2)$$

Where vector X of endogenous variables depends on the lag of itself and forecast errors e.

<sup>6</sup> Our variables follow Davoodi, Dixit and Pinter (2013).



In particular, the forecast errors  $e$  are now a linear combination of the structural shocks  $u$  through the inverse of matrix  $A$ :

$$e_t = \mathbf{A}^{-1} \cdot u_t \quad (3)$$

The reduced-form VAR is estimated with OLS, allowing us to recover coefficients  $G$  and the forecast errors. However, because the number of estimated parameters in the reduced form is smaller than the number of parameters in the structural form, restrictions on matrix  $A$  are needed in order to identify the structural model. A Choleski decomposition is applied to identify the matrix  $A$ . The ordering of the variables are as follows: real GDP ( $y$ ), price level ( $p$ ), reserve money ( $m$ ), policy rate ( $r$ ), credit to the private sector ( $c$ ), and nominal effective exchange rate ( $e$ ). This ordering implies the following:

- Shocks to real GDP and price level result in contemporaneous responses of reserve money.
- Reserve money is assumed to be the main monetary policy instrument, with shocks to reserve money considered as monetary policy shocks.
- Policy rates are assumed to be used as instruments to signal changes in monetary policy stance
- Commercial banks react with a delay to the policy rate.
- Exchange rates are determined by market forces.

## D. Data and Specification

**7. We use monthly measures of real GDP, CPI, reserve money, credit to the private sector, interest rates and nominal effective exchange rates.** Because only quarterly real GDP data was available monthly estimates of real GDP were derived by interpolating quarterly GDP data using a cubic spline, and then seasonally adjusted using the X13 ARIMA method. Due to the absence of policy rate in Seychelles, the T-bill rate was used instead. Quarterly GDP data were collected from the National Bureau of Statistics of Seychelles. CPI, reserve money, credit to the private sector, and nominal effective exchange rates come from the IMF IFS database. Global oil and food indices, US federal funds rate and the US industrial production were from the IMF GAS database. Variables are in log levels, except for interest rates.

- **The stationarity of the variables was assessed.** All variables were tested for stationarity using the Phillips-Perron test. The results reveal that all the variables are non-stationary in levels but the first differences are stationary.
- **Residuals were tested for serial correlation.** In order for a stationary VAR to be correctly specified, residuals need to be completely random or white noise. We tested for residuals autocorrelation, and excluded the numbers of lags for which serial correlation were found.
- **The stationarity of the variables was assessed.** All variables were tested for stationarity using the Phillips-Perron test. The results reveal that all the variables are non-stationary in levels but the first differences are stationary.

- **Residuals were tested for serial correlation.** In order for a stationary VAR to be correctly specified, residuals need to be completely random or white noise. We tested for residuals autocorrelation, and excluded the numbers of lags for which serial correlation were found.
- **The stationarity of the variables was assessed.** All variables were tested for stationarity using the Phillips-Perron test. The results reveal that all the variables are non-stationary in levels but the first differences are stationary.
- **Residuals were tested for serial correlation.** In order for a stationary VAR to be correctly specified, residuals need to be completely random or white noise. We tested for residuals autocorrelation, and excluded the numbers of lags for which serial correlation were found.
- **The optimality of the lag order was tested.** We investigated the lag structure of the VAR using lag length criteria. Based on the Likelihood ratio test, a lag of 3 was chosen.
- **The stability of the VAR system was assessed.** We checked the stationarity of the system as whole by looking at the inverse roots of the characteristics AR polynomial, and all roots lie inside the unit circle, resulting in the VAR being stationary<sup>7</sup>.

## E. Results

**Table 1. Seychelles: Variance Decomposition Results**

GDP					
Self	CPI	Reserve Money	Interest Rate	Credit	NEER
85.6	2.0	2.3	3.5	1.3	5.3
CPI					
GDP	Self	Reserve Money	Interest Rate	Credit	NEER
0.4	91.0	0.5	0.6	4.9	2.6

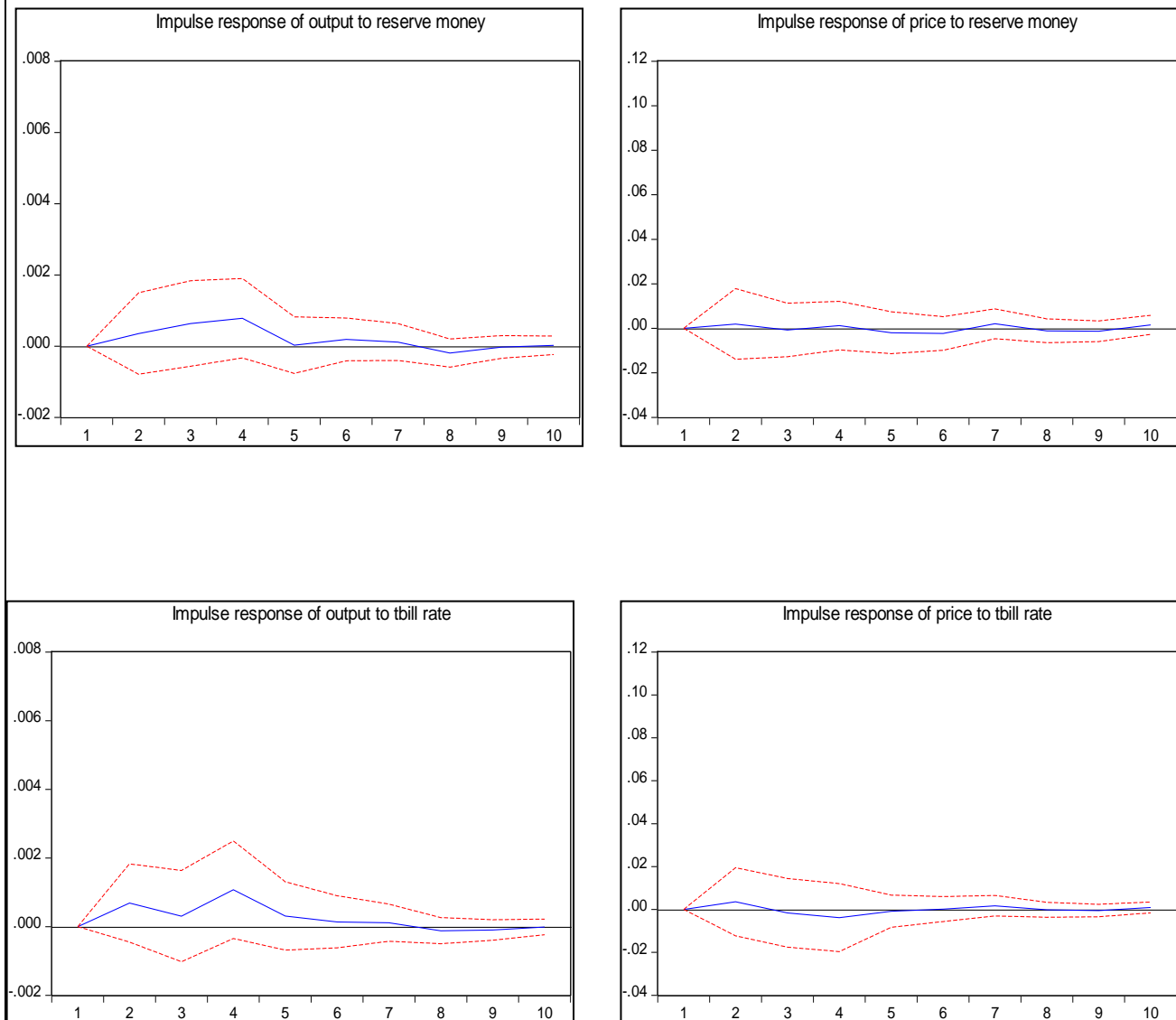
Sources: CBS and IMF staff estimates.

**8. Results from the variance decomposition show that contribution of monetary shocks to the variability of GDP and inflation is very small.** While the exchange rate and interest rate explain most of the variation in GDP due to monetary shocks, credit and exchange explain most of the variation in CPI. Shocks to the exchange rate and interest rate account respectively for 5.3 percent and 3.5 percent of the variation in GDP, and shocks to credit and exchange rate account for respectively for 4.9 percent and 2.6 percent of the variation in CPI.

<sup>7</sup> Had a solution of the characteristic polynomial had a root equal to one, then this would have revealed that there is cointegration between the variables, and a VECM model rather than an unrestricted VAR would have been more appropriate to estimate.

**9. Money and interest rate channels appear to be weak (figure 1).** Impulse responses show that neither output nor price react to a one standard deviation shock of reserve money and T-bill rate.

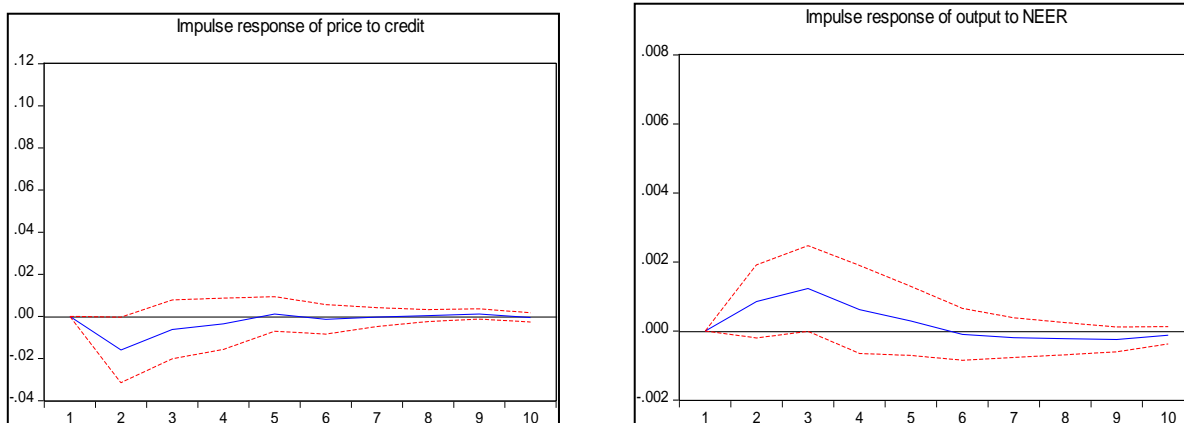
**Figure 1. Seychelles: No Output and Price Responses to (i) Reserve Money and to (ii) T-bill Rate**



Sources: CBS and IMF staff estimates.

**10. Credit and exchange rate channels seem to be only weakly present (figure 2).** A one standard deviation positive shock to credit has some brief impact on CPI. However, reserve money and interest rate were not found to have an impact on credit. Moreover, a one standard deviation positive shock to the exchange rate result in a weak increase in GDP. But NEER was not found to be responsive to either reserve money nor interest rate.

**Figure 2. Seychelles: Some Partial Response to Credit and Exchange Rate**

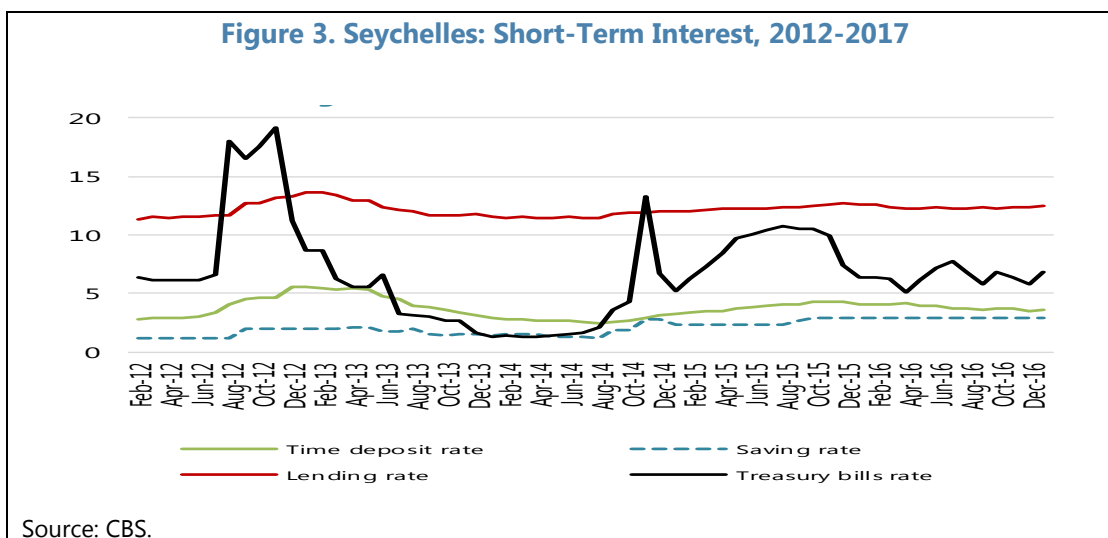


Sources: CBS and IMF staff estimates.

## F. Conclusion and Policy Recommendations

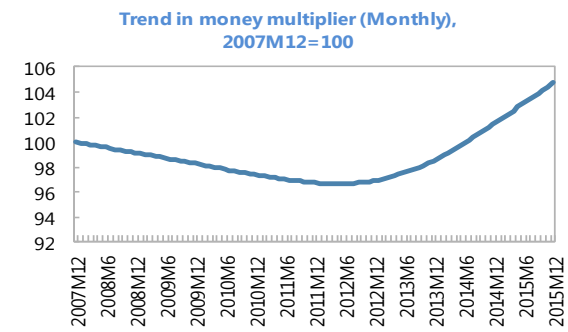
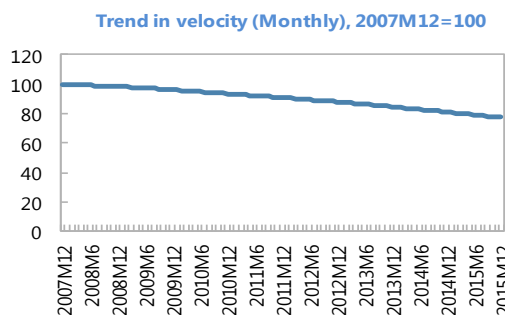
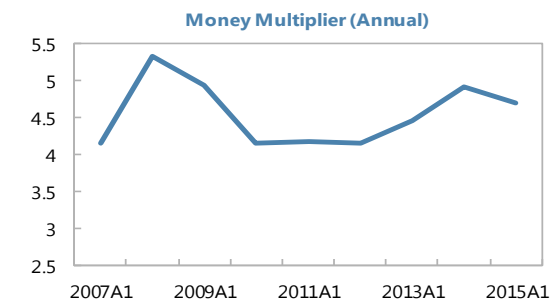
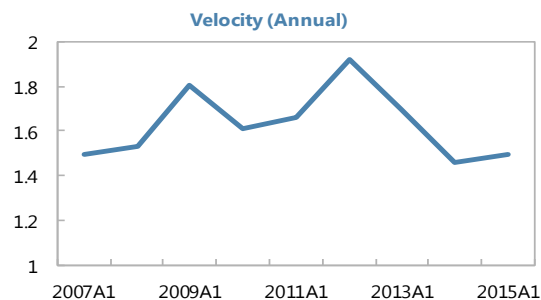
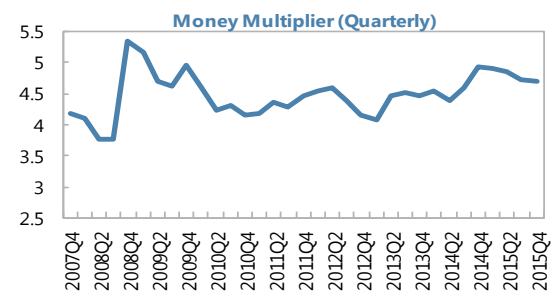
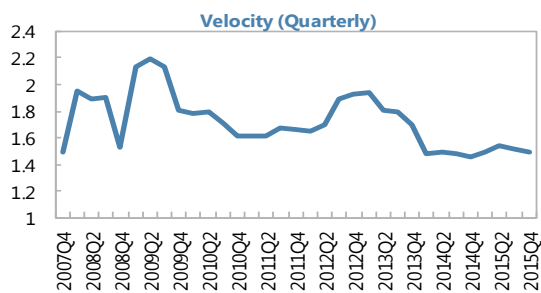
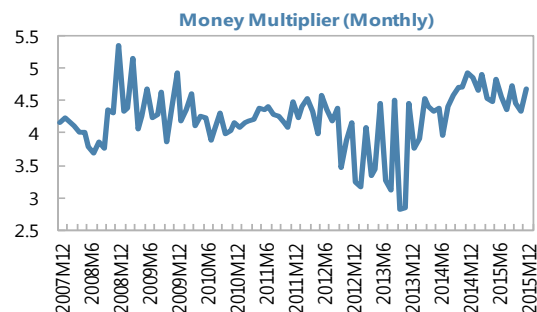
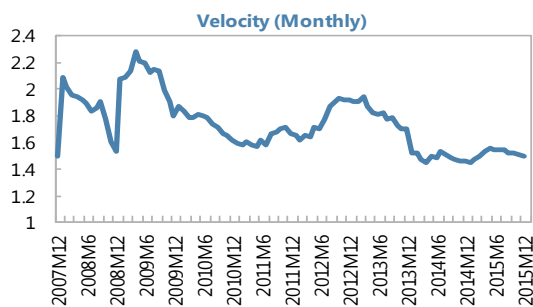
**11. This note aimed at empirically assessing the efficiency of monetary transmission mechanism in Seychelles and found that transmission is generally weak.** Results show that the impact of the money and interest rate channels are statistically insignificant while there are only partial evidence of a credit channel and exchange rate channel.

**Figure 3. Seychelles: Short-Term Interest, 2012-2017**



Source: CBS.

**Figure 4. Seychelles: Velocity and Money**



Sources: Seychelles authorities and IMF staff estimates.

**12. In fact, the broader trend of velocity and money multiplier for Seychelles indicates that both velocity and money multiplier have not been stable over time, which may indicate some ineffectiveness in the monetary transmission (Figure 3).** The monetary transmission requires stable money multiplier and velocity, i.e. that changes in reserve money affect money supply, and changes in money supply affect output and price. However, an unstable money multiplier (transmitting changes in reserve money into changes in money supply) or velocity (affecting the link between money supply and output) would make those relationships unpredictable. In Seychelles, velocity has tended to decline over time, especially between 2013 and 2015. Fluctuations in velocity were mainly driven by volatility in broad money rather than GDP. While money multiplier was broadly stable from 2011 to 2013, it increased slightly from 2013 to 2014 before declining in the months during 2015.

**13. The limited transmission could reflect inefficiencies of the current monetary framework.** Existing inefficiencies include (i) structural excess liquidity in the banking system, which could significantly affect the monetary transmission through the money channel, (ii) limited interest rate corridor that does not allow a clear signaling of the monetary stance and guidance to the market short-term interest rates, which is likely to hamper the interest rate channel, and (iii) underdeveloped money markets including interbank markets, which would probably limit the effectiveness of the credit channel.

**14. The on-going transition to an interest rate based framework should provide a step towards a more effective monetary transmission<sup>8</sup>.** To strengthen the interest rate impact, the CBS is currently switching to an interest rate based framework from its reserve money based framework. Currently, short-term rates do not seem to respond to fluctuations of the T-bill rate (figure 4). The reintroduction of the interest rate corridor should therefore allow a better signaling and transmission of the monetary stance. While the specifics of the new monetary framework are still under discussion, the introduction of a monetary policy rate, currently scheduled to be approved by June 2017 and implemented by July 2017, should help reduce short-term interest rate volatility and at the same time, provide guidance short-term interest rates.

---

<sup>8</sup> For more details on the reforms under discussion, see Annex x on Modernizing Seychelles Monetary Policy Framework.

# MODERNIZING SEYCHELLES MONETARY POLICY FRAMEWORK<sup>1</sup>

This note examines Seychelles' current monetary policy framework, its challenges and reforms under consideration. Modernizing Seychelles monetary policy framework into one based on interest rates should enhance monetary policy transmission mechanisms and encourage further financial deepening, laying the foundation for a more effective monetary policy implementation.

## A. Current Monetary Policy Framework

**1. The CBS's objective, intermediate and operational targets are similar to those adopted by many African countries and may be described as a standard reserve money targeting framework.** The CBS's main policy objectives are to promote domestic price stability and maintain a sound financial system. The price stability objective is to be achieved by influencing the intermediate target, broad money (M3) growth, with reserve money being the operational target.

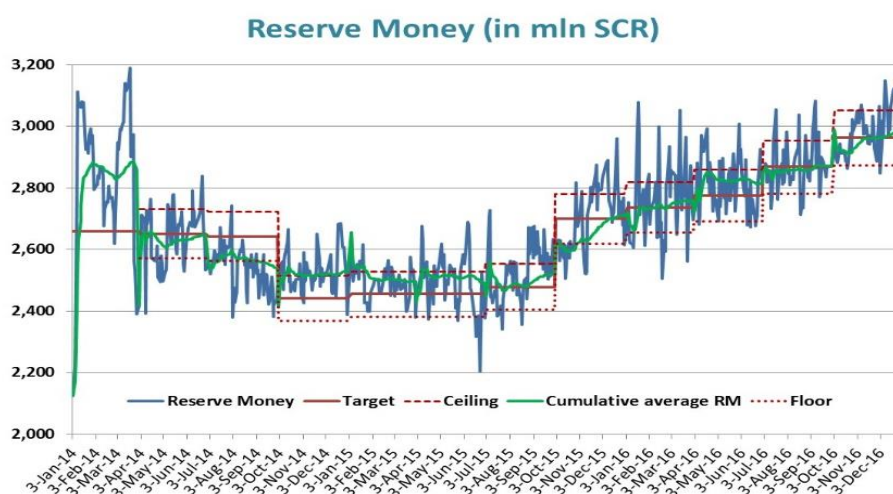
**2. In operational terms, reserve money serves as the anchor for domestic price stability.**

Between 2008 and 2013

the CBS targeted the quarterly end-period reserve money, but meeting the target failed to prevent the inflationary outburst of 2012 and did not allow guidance for day-to-day operations. As a result, a quarterly target on daily average reserve money was adopted in April 2014 and monetary operations have since been conducted to ensure

that the arithmetic daily average of reserve money over the quarter does not exceed the upper bound of a symmetrical band of three percent around the quarterly reserve money target<sup>2</sup>.

**3. The CBS views exchange rate stability as an important policy objective in the context of the floating exchange rate regime<sup>3</sup>.** Because Seychelles is a very small open economy, inflation is driven mainly by increases in food and non-food imported items, which results in inflation



Sources: CBS and IMF staff estimates.

<sup>1</sup> Prepared by Arina Viseth (AFR)

<sup>2</sup> The upper bound is a performance criterion under the current IMF program.

<sup>3</sup> At the time of the writing, discussions on Seychelles' de facto exchange rate classification as a floating regime are on-going, and reassessment will be conducted for the next AREAER chapter.

expectations strongly based on the exchange rate and the risk of currency depreciation. However, only (for brief period) in 2012 did the CBS intervene in the foreign exchange market to stabilize the exchange rate. The CBS intervenes in the FX market mainly for spot purchase of foreign currency against rupees with the objective to build international reserves.

- **Minimum reserve requirement (MRR).** Minimum reserve requirement ratios stipulate the minimum percentage of deposit liabilities that financial institutions are required to hold as cash with the CBS. The ratios are currently at 13 percent of total deposit liabilities, with liable deposit including foreign currency deposits of residents and the primary purpose of the MRR's is to manage liquidity. Minimum reserve requirements are held in Rupee and in foreign currency (USD and EUR) and are not remunerated.
- **Standing facilities.** Standing facilities aim at managing overnight liquidity in the financial system. There are two types of standing facilities, the standing credit facility (SCF) and the standing deposit facility (SDF). The SCF is an overnight collateralized loan facility that provides funds to the commercial banks at a predetermined interest rate to cover temporary end-of-day shortfalls that can arise in the daily settlement of payments. The SDF is an overnight deposit made with the CBS at a pre-determined interest rate for the banks to place any overnight excess reserves. The rate is 0.25 percent and 1.75 percent respectively for the deposit facility and credit facility.
- **Emergency lending facility.** Emergency lending facility supports banks with severe and persistent liquidity problems. This facility is not used for monetary policy purposes but aims at safeguarding against systemic risk and financial instability.
- **T-bills auction.** T-bills with maturities of 91, 182, and 364 days are the main open market instruments for managing structural liquidity over the longer horizon. They are auctioned twice every week, on Tuesday for monetary policy purpose and on Friday for fiscal needs. While open to all investors (including households) commercial banks dominate the primary market. There is currently no secondary market for T-bills.
- **Deposit/Credit auction arrangement (DAA/CAA).** The CBS also uses its own instruments for open market operations. The DAAs have been used to mop up excess liquidity through daily operations since 2014. They are issued through a quantity auction (briefly changed to a price auction in August 2014) where banks place one bid per maturity. The most common maturities are the 7 and 14 day. CAAs are lending facilities with the interest rate generated from an auction process similarly to the DAA's. The CBS's use of this facility will depend on liquidity needs on the financial market and on the CBS's prevailing monetary policy stance.



CAAs have not been used since its creation in 2009, given the structural excess liquidity in the banking system.

- **Foreign Exchange auctions (FEA).** The FEA allows for the purchase and sale of foreign currency and the CBS uses those for both external FX reserve and liquidity management.
- **Medium-term and long-term bonds.** In 2014, as liquidity surged, the CBS issued for the first time medium-term bonds. The treasury bonds have maturities of 3-, 5-, and 7-years, and the issuance of these medium to long-term bonds aim at dealing with structural liquidity.

## B. Challenges Arising from The Current Monetary Policy Framework

**4. Seychelles' banking system is prone to structural excess liquidity, largely built-up by the accumulation of net foreign assets (NFA).** For example, in 2009, NFA increased significantly, forcing the CBS to mop-up excess liquidity. Then again in the fall of 2013, a massive excess liquidity resulting from opportunistic CBS purchases of foreign exchange occurred. However, this time the CBS was unable to mop-up excess liquidity without undermining its capital position, consequently driving short-term interest rates down. In 2014, the government issued medium-term rupee-denominated bonds as well as weekly T-bills, which considerably reduced excess liquidity. Because excessive liquidity represents a risk to macro stability, it is important that the government continues to provide all the T-bills needed to achieve the country's monetary policy goals, even if that means a higher debt burden. Macro stability is a public good and as such, should be a priority.

**5. After a brief introduction in 2014, the authorities are considering the reintroduction of an interest rate corridor.** The signaling of the monetary stance has been confusing for the markets. The CBS regularly influences the auction outcomes by eliminating bids whenever it believes those are out of line from its views on the appropriate interest rate level or to avoid interest rate volatility. This has led to confusion in the markets as to what rate to bid and what rate would be accepted. Lack of understanding of the CBS's auction directions by market participants have thus contributed to a weak signaling of the preferred monetary policy stance.

**6. Structural excess liquidity may have contributed to an underdeveloped money and interbank market.** Interbank rates are quoted rather than transacted rates, and the pricing of interbank transactions is mainly the result of bilateral negotiations, longstanding relationships or credit lines between counterparties. The T-bill rates and the standing facilities' rates play a marginal role in the interbank pricing mechanism. The lack of market infrastructure including a trading platform, cumbersome procedures for ownership transfer, and a still-pending legislation for master repurchase agreements, have all contributed to the absence of a secondary market.

## C. Reforms Under Consideration

**7. Improving liquidity forecasting.** The CBS is receiving TA to help strengthen its analysis of the banking system's liquidity position and the size of its precautionary liquidity buffer. In this

regard, training additional staff for continued liquidity forecasting would be helpful. In addition, forecast on foreign exchange auctions for reserve management purposes could be conducted for the medium-term, and the currency composition of required reserves could be better monitored. These measures would reduce liquidity risk but call for more coordination within the CBS and between the CBS, the Ministry of Finance and the Treasury.

**8. Modernizing liquidity management operations and finding alternative instruments.**

The issuance of T-bills and government bonds is constrained by the government's debt reduction strategy. Accordingly, alternative instruments which would not compromise the CBS' capital position might be needed to manage liquidity. In this regard, the CBS should clarify and accelerate to the extent possible the resolution of the legal issues related to repurchase operations and the introduction of a master repurchase of agreement<sup>4</sup>; so that over the medium term, repurchase operations can substitute for CAAs and DAAs as primary open market instruments. This will also allow the CBS to leverage the current government securities it has on its balance sheet for monetary purposes.

**9. Reinforcing the interest rate corridor.** Having a functioning interest rate corridor would support the development of the interbank market, and give incentive for banks to more actively manage liquidity. The CBS could introduce a new monetary framework focused on an implicit monetary policy rate (MPR) that would fluctuate within a corridor formed by the SCF and SDF rates. The reintroduction of the interest rate corridor, currently scheduled to be approved by June 2017 and implemented by July 2017, would help reduce short-term interest rate volatility and at the same time, provide guidance short-term interest rates. The implicit MPR and hence the interest rate corridor should be set consistently with the RM target and adjusted up or down to achieve the medium-term inflation target.

**10. As the interest rate corridor strengthens, the money market and interbank market should further develop, reducing the need to issue more monetary debt.** The interbank market has been inactive because of structural liquidity and pricing difficulties. A better liquidity management and a functional interest rate corridor, should therefore support the development of the interbank market. Interbank and secondary markets are essential to an effective financial system. In the absence of such markets, even a short-term financial instrument can be rendered illiquid. The development of these markets will also eliminate the incentive for banks' liquidity hoarding. Better communication with market participants will also support well-functioning financial markets and promote effective monetary policy implementation.

**11. Discussions are still on-going.** Based on the latest discussions with recent TA missions and the authorities, the following issues are under consideration: (i) how much focus needs to be put on interest rates; (ii) the width of the corridor; (iii) whether the corridor should be symmetric or asymmetric; (iv) access to standing facilities; (v) auction frequency and maturities; (vi) the implementation date of the new framework; and (vii) the sequencing of communication events.

---

<sup>4</sup> Currently scheduled for mid-2018.

## References

Boivin, Jean, Michael T. Kiley, and Frederic S. Mishkin. (2011). "How Has the Monetary Transmission Mechanism Evolved Over Time?" In: B. M. Friedman and M. Woodford (Eds.), *Handbook of Monetary Economics*, Vol. 3A, Elsevier, North Holland, pp. 369-421.

Christiano, Lawrence J., Martin Eichenbaum, and Charles L. Evans. (1999). "*Monetary Policy Shocks: What have we Learned and to what End?*" In *Handbook of Macroeconomics. Volume 1A*, ed. John B. Taylor and Michael Woodford, 65-148: *Handbooks in Economics*, vol. 15; Amsterdam; New York and Oxford: Elsevier Science, North-Holland.

Clarke, Daniel Jonathan and Stefan Dercon. 2016. "Dull Disasters? How Planning Ahead Will Make a Difference", Oxford University Press, Oxford; The World Bank Group, Washington, DC.

Cummins, D., and O. Mahul, 2009, *Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention*. Washington, DC: World Bank.

Davoodi, H., Dixit, S., and Gabor, P. (2013). "Monetary Transmission Mechanism in the East African Community: An Empirical Investigation." IMF working paper No. 13/39.

Grigoli, F. and J. Kapsoli, 2013, "Waste Not, Want Not: The Efficiency of Health Expenditure in Emerging and Developing Economies," Working Paper 13/187, International Monetary Fund, Washington.

International Monetary Fund (2016). *Annual Report on Exchange Arrangements and Exchange Restrictions* (Washington, October 2016).

International Monetary Fund (2016), "Small States Resilience to Natural Disasters and Climate Change—Role of the IMF" IMF Policy paper.

International Monetary Fund (IMF), 2017, "Seychelles: Fourth and Fifth Reviews under the Extended Arrangement and Request for Modification and Waiver of Applicability of Performance Criteria—Staff Report." Country Report No. 17/51, IMF, Washington.

Klemm, A. 2009, "Causes, Benefits, and Risks of Business Tax Incentives." Working Paper 09/21, International Monetary Fund, Washington.

Klemm, A., A. Abbas, S. Bedi, and J. Park, 2012, "A Partial Race to the Bottom: Corporate Tax Developments in Emerging and Developing Economies." Working Paper 12/28, International Monetary Fund, Washington.

Mishra, P., P. Montiel, and A. Spilimbergo, (2010). "Monetary Transmission in Low Income Countries." IMF working papers No. 10/223.

Mishra, Prachi, and Peter Montiel. (2012). "How Effective Is Monetary Transmission in Low-Income Countries? A Survey of the Empirical Evidence." IMF Working Paper No. 12/143.

National Oceanic and Atmospheric Administration, 2015, "NOAA Declares Third Ever Global Coral Bleaching Event," NOAA News, United States Department of Commerce, Washington DC.

Pouponneau, A., 2014, "Why We Must Save Small Island Nations from Climate Change," One Young World Summit, Dublin.

Republic of Seychelles, 2015, "Intended Nationally Determined Contribution (INDC) Under the United Nations Framework Convention on Climate Change (UNFCCC)," United Nations, Paris.

Smith, D., 2016, "Seychelles Reefs Hit Hard, but Pockets of Resistance Give Hope," Environment News, University of Technology, Sydney.

World Bank, 2014, "Seychelles: Programmatic Public Expenditure Review Policy Notes—Health, Education, and Investment Management." World Bank, Washington.

World Bank, 2016, "Seychelles: Framing a More Strategic Social Protection System—Social Protection Policy Note." World Bank, Washington.

Weber, Axel, A., Gerke, Rafael, Worms, Andreas (2009). "Has the Monetary Transmission Process in the Euro Area changed? Evidence based on VAR Estimates." BIS Working Papers 276.

Clarke, Daniel Jonathan and Stefan Dercon. 2016. "Dull Disasters? How Planning Ahead Will Make a Difference", Oxford University Press, Oxford; The World Bank Group, Washington, DC.

Cummins, D., and O. Mahul, 2009, *Catastrophe Risk Financing in Developing Countries: Principles for Public Intervention*. Washington, DC: World Bank

IMF (2016), "Small States Resilience to Natural Disasters and Climate Change—Role of the IMF" IMF Policy paper.