

AN ASSESSMENT OF THE ECONOMIC LOSS FROM COVID-19 CONTAINMENT POLICIES IN SEYCHELLES

A. Introduction

1. There is a strong need to quantify the impact of the COVID-19 containment and closure policies as countries worldwide strive to halt the spread and the associated suffering of the pandemic. One of the core problems arises because national containment policies have effects both within and across countries. To be able to formulate optimal policies, policymakers need to first, understand the impact of restrictions imposed and secondly, assess the likely effects in the future.

2. This paper considers the containment and closure policies implemented in Seychelles – a Small Island Developing State (SID) highly dependent on tourism – and the resultant impact on Gross Domestic Product (GDP) in 2020-21. The assessment compares the economic performance of Seychelles against a set of other SIDS also dependent on tourism. The study adopts two econometric methods. The first method constructs a reference country to allow comparison against Seychelles, while the second method is a panel data regression. The analysis indicates that containment and closure policies contribute to a stronger GDP decline, as would be the case without such policies. In the following sections, the paper first explores how COVID-19 evolved in Seychelles and describes the authorities' key responses. Secondly, we review the economic indicators of Seychelles. Thirdly, the methodology and the results are explained, followed by some conclusions.

B. The Evolution of and Response to the Pandemic in Seychelles

3. From the onset, the travel and tourism industry were the most affected sectors in Seychelles as COVID-19 spread internationally and global travel restrictions ensued. The Seychellois authorities first announced restrictions on travel in February 2020 - limiting travel to Seychelles for visitors with a travel history to China. As the pandemic spread from China to other countries and with the detection of the country's first positive COVID-19 case in March 2020, the Seychellois authorities further increased travel restrictions by limiting travel to and from Seychelles.

4. A nationwide lockdown was imposed in April 2020, requiring the closure of non-essential businesses and for citizens to stay at home. In addition, all flight operations at the Seychelles International Airport were halted. The lockdown resulted in a shut-down of economic activity within Seychelles. The lockdown measures imposed within the country were partially lifted in May 2020 - essential workers were permitted to resume work, schools were allowed to resume, and inter-island movements were allowed - while the authorities-imposed restrictions on movement for citizens after working hours and during weekends.

5. Together with the lockdown, the Government introduced an array of supporting measures to assist households and businesses. The Government undertook to pay the salaries of employees in the private sector, initially for a period of three months. From July 2020, this was subject to stricter conditions, catering only to Seychellois employees and self-employed individuals. At the same time, the facility was extended until December 2020, given the prolonged nature of the pandemic. The Government also bolstered its budget and committed to assisting the citizens through the Agency for Social Protection and the Unemployment Relief Scheme. Additionally, taxes and mandatory pension contributions by businesses in the private sector were deferred.

6. To complement the efforts of the Government, the Central Bank of Seychelles (CBS), together with the Seychelles Bankers Association, also introduced supportive measures. The commercial banks agreed to offer moratoria to borrowers impacted by the effect of the pandemic. Initially in March 2020, commercial banks offered moratoria to individuals and businesses for a period of 3 and 6 months, respectively. In September 2020, commercial banks agreed to extend moratoria on a case-by-case basis through discussion with their respective clients.

7. The CBS introduced two private-sector relief credit line facilities (PSRCLF) to be administered by commercial banks and other financial institutions to provide working capital support to businesses impacted by the COVID-19 pandemic. The CBS launched the first facility dedicated to Micro, Small, and Medium Enterprises (MSMEs) in March 2020 for businesses with sales turnover not exceeding SR 25 million, at an interest rate of 1.5 percent. In June 2020, the CBS launched a second facility dedicated to Large Enterprises targeting businesses with sales turnover above SR 25 million at a rate of 4.5 percent.

8. Once the number of daily cases was contained to well below 50, the authorities eased some restrictions on movement (Figure 1). The first round of easing happened already in June 2020, which allowed restaurants, shops, bars, casinos, gyms, cinemas, and recreational boats to operate. Also, the Seychelles International Airport resumed operations only for private and charter flights carrying tourists with a negative COVID-19 test result that was not older than 48 hours from the time of boarding. Additionally, the travelers were required to provide proof of their accommodation at an approved establishment, and they were obliged to stay in their hotel/guesthouse for the first 14 days of their stay.

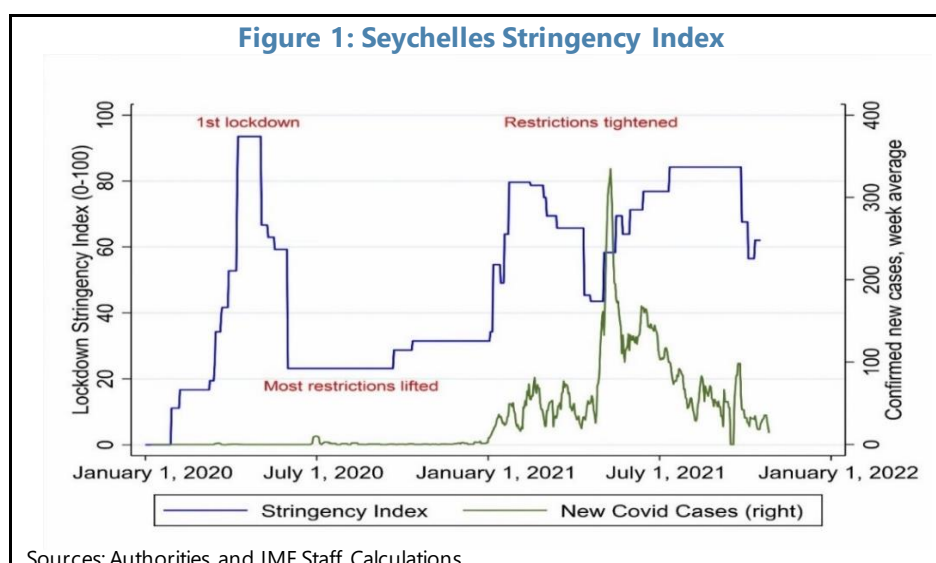
9. In a second round of easing in August 2020, Seychelles allowed commercial passenger flights to return from countries approved by the Ministry of Health. A set of guidelines for visitors and those involved in tourism-related activities were issued. Tourism establishments that met the requirements of the Ministry of Health were issued a certificate allowing them to operate.

10. However, there was a gradual increase in new cases during the end of year festive period. The authorities responded by restricting movements in late December 2020. Shortly after the new year, the first fatality was recorded. In response, the Ministry of Health

further tightened the restrictions on movement in January 2021. Schools were closed, and all restaurants were mandated to close with exceptions for hotels and guest houses - all open establishments were required only to serve the guests they were accommodating. At that time, the authorities launched an ambitious plan to vaccinate 70 percent of the population by March 2021. The vaccination plan was unveiled in January 2021, and citizens began to receive vaccines from then. By March 2021, Seychelles had one of the world's highest vaccination rates, close to the target of 70 percent. As intended, in late-March 2021, the country reopened its borders completely for visitors from other countries allowed by the Ministry of Health. All visitors had to provide a valid PCR test 72 hours from their arrival to enter Seychelles.

11. Despite implementing a successful vaccination program, a rapid increase in the number of new COVID-19 cases and related deaths began in May 2021. The rapid increase in the number of cases and deaths was due to the latest variants of COVID-19. This meant that the authorities had to enforce stricter measures within the country. A prohibition to have gatherings of more than four persons indoors and outdoors was imposed. However, all shops, restaurants, bars, food outlets, gyms, and spas were allowed to operate as per the guidelines of the Ministry of Health.

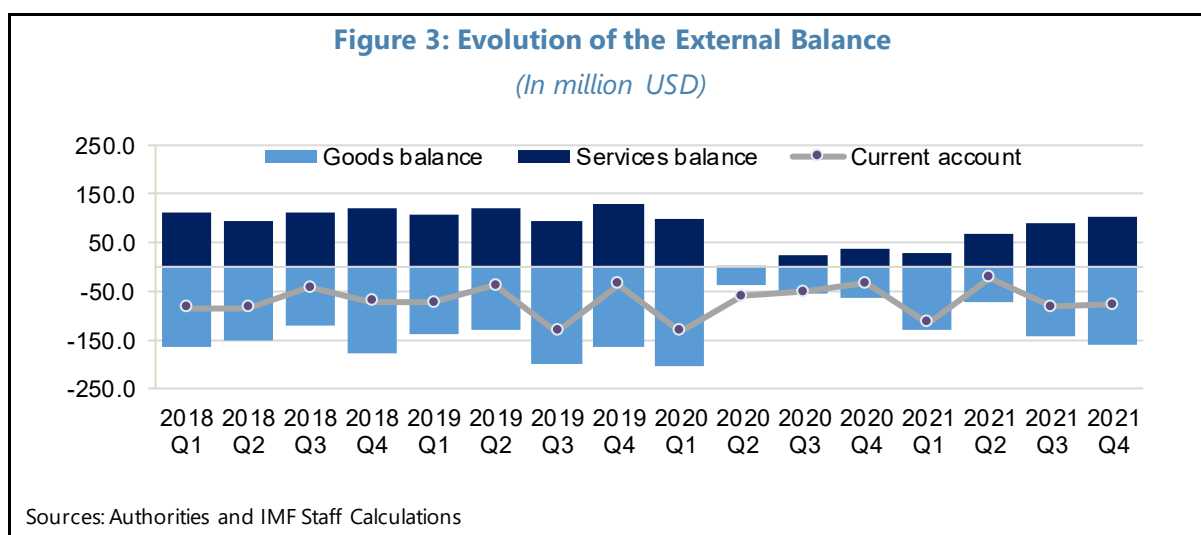
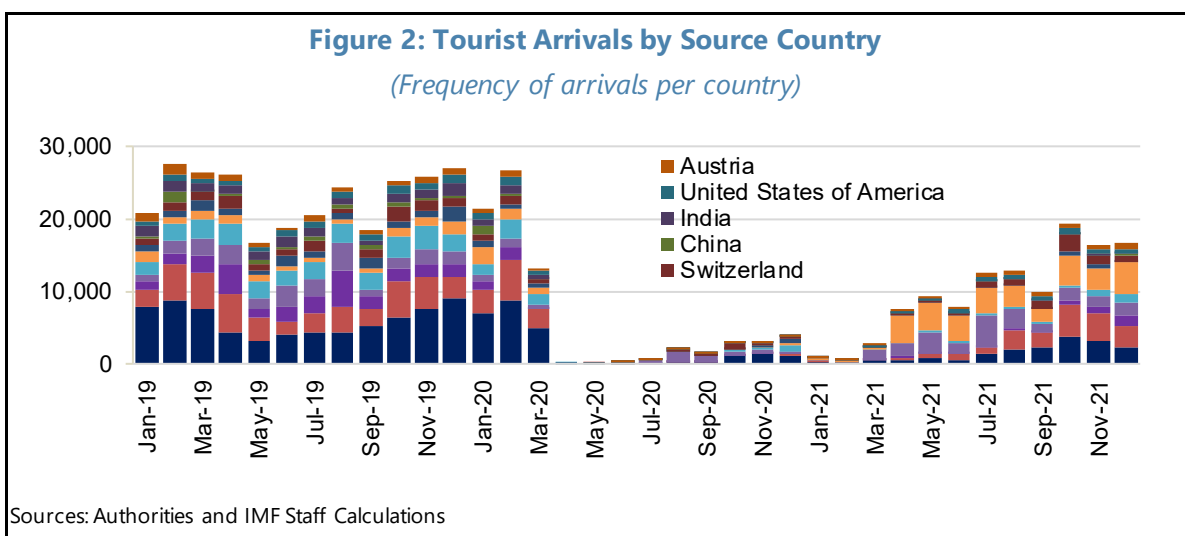
12. Eventually, the authorities relaxed the restriction of movement in September 2021 after observing a decline in daily new cases, allowing sporting activities (without spectators), casinos, bars, religious activities, and meetings of not more than 30 people to resume. Moreover, the Ministry of Health started to provide booster doses to citizens who had already received a first and second dose of vaccines.



C. Economic Impact of the Pandemic

13. Tourist arrivals had remained very modest until April 2021, when the good progress with the vaccination campaign allowed the re-opening of borders (Figure 2).

Despite a recovery since then, tourist arrivals and earnings have remained well below pre-pandemic levels. The continued low level of arrivals from traditional European countries (e.g., Germany, France, Italy) is partly compensated by the increase in arrivals from other countries, such as United Arab Emirates, Russia, and Israel. Tourists arrivals from traditional markets in Western Europe began to recover in significantly during the first half of 2022 and more than offset the drop in tourist arrivals from Russia and Ukraine.

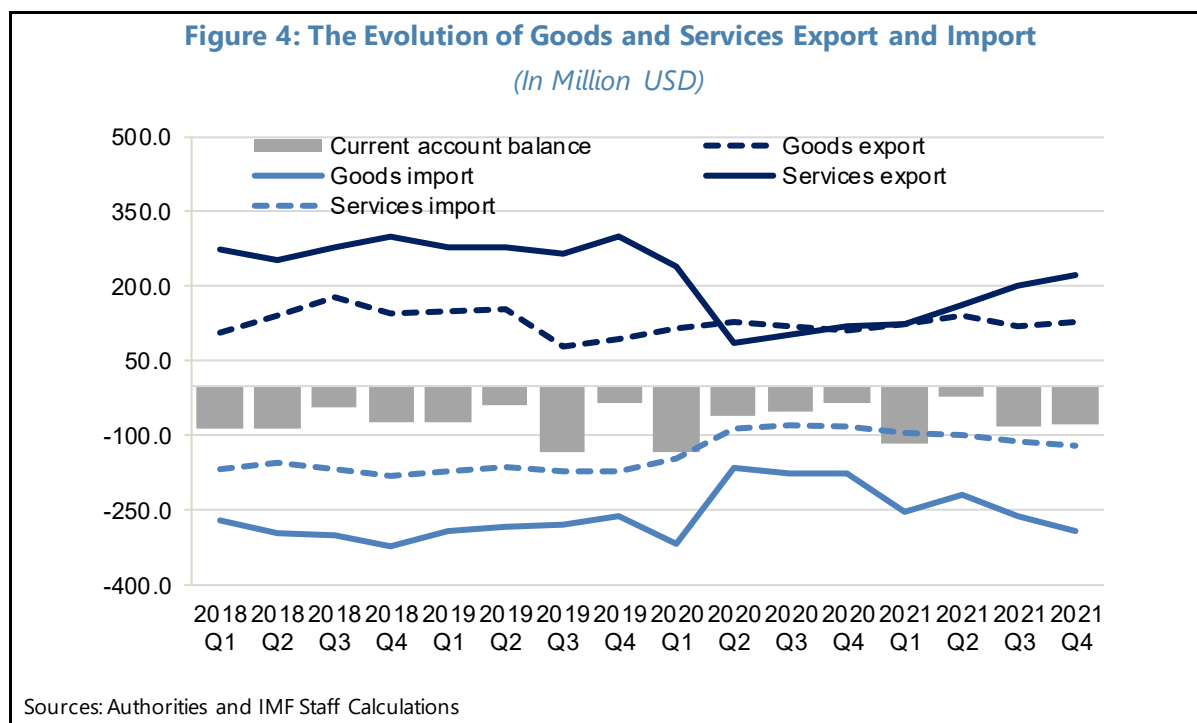


14. As a result of the steep drop in tourism earnings, the current account deficit widened to 25 percent of GDP in 2020¹. Most of the expected FDI, which had been the major source of financing of the current account deficit, were postponed to 2021 and beyond. These developments have led to a sharp deterioration in the external position. The large reduction of the positive services balance was partly compensated by a contraction of the

¹ As per the rebased GDP figures.

deficit on goods trade (Figure 3). The overall current account deficit is expected to recover partly to around 20 percent of GDP in 2021.

15. The downturn in the tourism industry led to a contraction in goods imports driven by both the decline in FX earnings and in the associated consumption in tourism related activities. Disaggregated data from the balance of payments show that the contraction of goods imports prevented a further deterioration of the current account deficit (Figure 4).



16. Economic activity declined by almost -8 percent in 2020 (compared with the pre-crisis projection of a 3.5 percent expansion), on account of a pronounced fall in exports of tourism services². Following the re-opening of the country for tourism, output growth is estimated to have strongly rebounded to 7.9 percent in 2021 (compared to a pre-COVID projection of 4.1 percent).

17. The primary fiscal balance reached a deficit of 14.7 percent of GDP in 2020 (compared with a surplus of 2.5 percent of GDP targeted by the pre-pandemic 2020 budget). The increase in expenditure was largely driven by transfers² and additional health expenditure. Expenditures reached 52 percent of GDP in 2020, compared with 40 percent of GDP in the original 2020 budget. In 2021, transfers returned to pre-pandemic levels, while the overall fiscal deficit shrank gradually (Figures 5 and 6 and Tables 1 and 2). According to the

² These include the main categories as follows: 'Social Program of Central Government', 'Transfer to Public Sector from Central Government' and 'Benefits and Approved Programs of the Agency for Social Protection'.

latest data, the 2021 primary deficit outperformed expectations and narrowed to 3 percent of GDP compared to 9.7 percent of GDP expected early in 2021. In addition to unwinding COVID-19 related support measures, the government also implemented other current expenditure-saving measures and offset the reduction in grants and project loans by under-executing capital expenditures.

Figure 5: Evolution of Fiscal Expenditure

(In millions of SCR)

Expenditure was largely driven by transfers and additional health expenditure

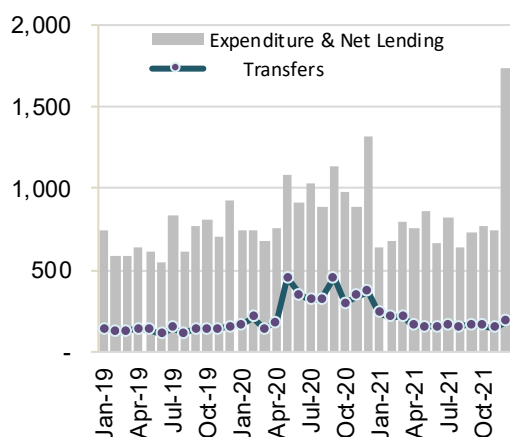
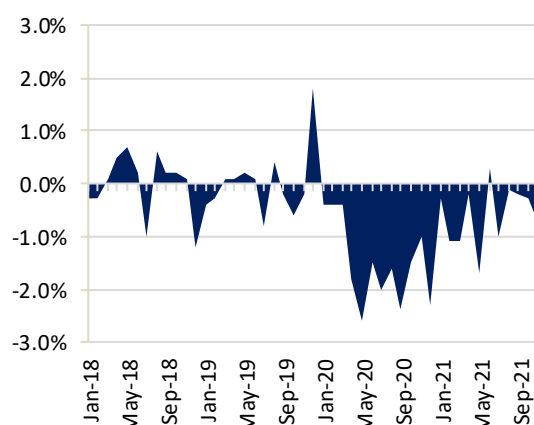


Figure 6: Overall Fiscal Balance

(In percent of GDP)

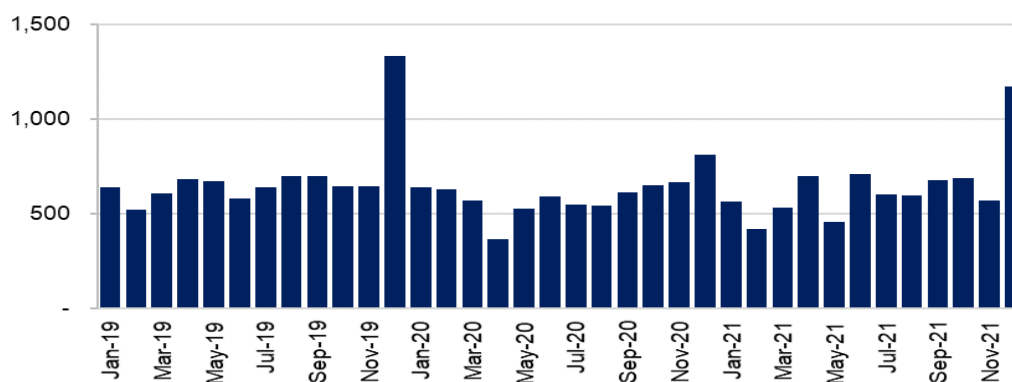
A gradually improving fiscal balance since Q2 2020



Sources: Authorities and IMF Staff Calculations

18. The contraction in tourism related activities and underperforming dividends were the main factors that negatively impacted revenues. The total revenue (excluding grants)-to-GDP ratio dropped to 32 percent in 2020, compared to 38 percent before the pandemic (Figure 7 and Table 1)³.

Figure 7: Revenue & Grants (in SCR millions)



Sources: Authorities and IMF Staff Calculations

³ The fiscal indicators "after the shock" are expressed in percent of the revised GDP in the text and also in Table 1.

19. The exchange rate depreciated quickly between March 2020 and March 2021. However, as soon as the borders were re-opened, the rupee recovered to close to its pre-pandemic value after a few months (Figure 8).

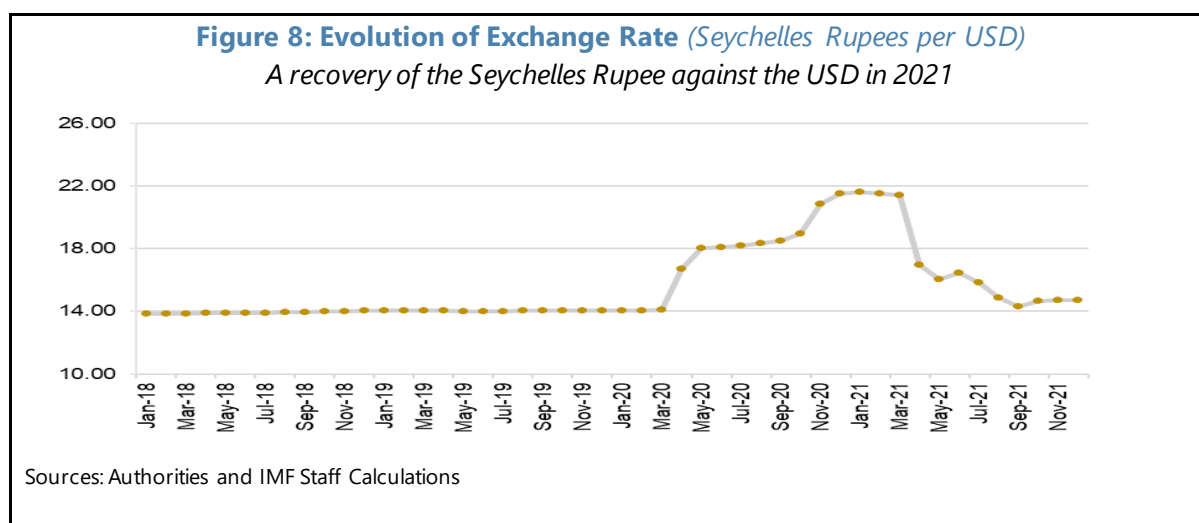


Table 1. Seychelles: Selected Economic Indicators, 2020-21, Before and After COVID-19 Shock¹

	2020		2021	
	Before the shock ²	After the shock/Actual	Before the Shock ²	After the Shock/Actual
Real economic activities(annual percentage change, unless otherwise indicated)				
Nominal GDP (millions of Seychelles Rupee)	24,447	22,211	26,198	24,611
Real GDP ²	3.5	-7.7	4.1	7.9
CPI (annual)	2.1	1.2	2.9	9.8
Credit to the private sector	10.1	20.2	...	-11.9
Fiscal position(percent of GDP)				
Total revenue, excluding grants	37.7	32.2	36.2	31.2
Expenditure and net lending	40.2	51.5	39.1	40.0
Overall balance, including grants	0.1	-17.5	0.0	-5.6
Primary balance	2.5	-14.7	2.5	-3.0
Total government and government-guaranteed debt	57.3	88.7		76.8
Balance of payments(percent of GDP)				
Current account deficit (in percent of GDP)	-17.6	-21.9	51.7	-20.1
Tourism earnings	625.0	221.4	662.0	309.6
FDI into Seychelles	268.0	134.4	318.0	148.4

Sources: IMF Staff Estimates

¹ The economic indicators "after the shock" are expressed in percent of the rebased GDP

² Projections at the time of the 4th review under the PCI

	2020		2021	
	SCR million	In percent of GDP	SCR million	In percent of GDP
Covid-19 Micro and Small Business Support Fund -	30.0	0.1
DBS Wage Grant-COVID 19	1266.1	5.7	192.0	0.8
Unemployment Relief Scheme	21.8	0.1
PMC and HFC Housing Loan Repayment Scheme	13.8	0.1	25.4	0.1
Total	1309.8	5.9	239.2	1.0

Sources: Authorities and IMF Staff calculations
^{1/} The figures are expressed in percent of the rebased GDP

D. Methodology and Data

20. Seychelles was one of the fastest vaccinating countries in the world, opening borders in March 2021, much earlier than other tourist islands. Mauritius, for example, opened considerably later. In March, most countries were still battling with a serious pandemic. Later in 2021, however, containment policies became more stringent in Seychelles. We exploit this variation in the data to estimate the effects of these measures.

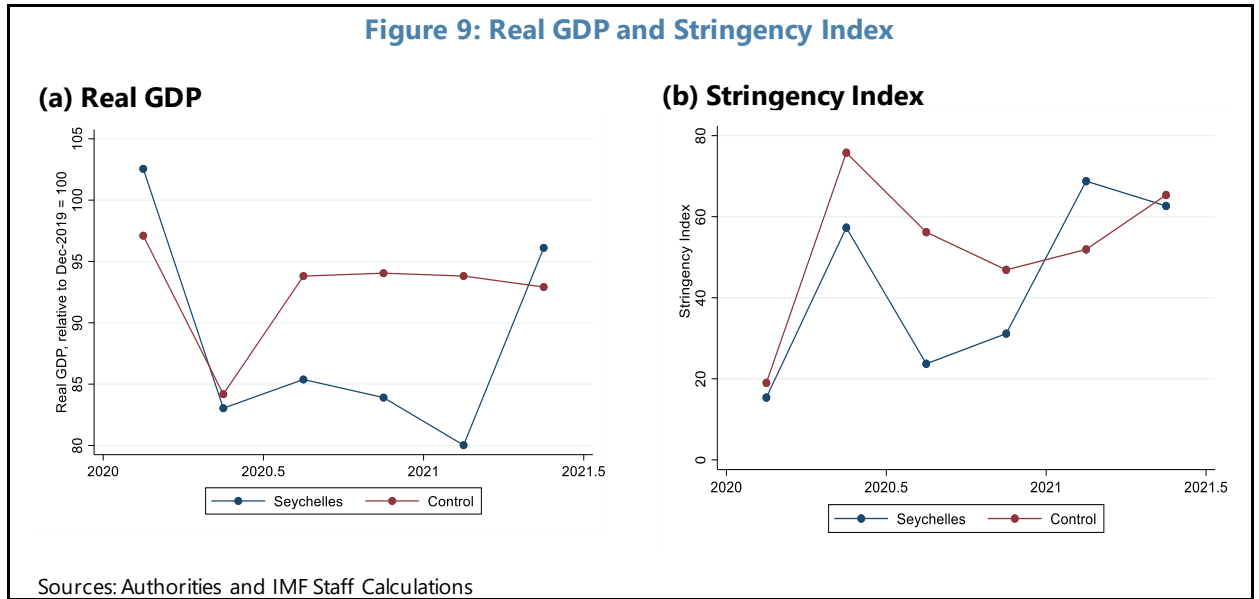
21. We compare Seychelles to a basket of other tourist-dependent small economies. We track their economic activity over time and examine how the difference between Seychelles and these other countries relates to the containment policies.

22. We use two methods. First, we construct a reference country using the synthetic control method developed by Abadie et al. (2010). This reference country is a mix of other island states dependent on tourism that have good data coverage – Bahrain, Dominican Republic, and Mauritius. We use pre-pandemic data from the three countries to determine their weights in the synthetic control case. The weights ensure that the resulting reference country tracks Seychelles' GDP growth before the pandemic as closely as possible. For details, see the Annex.

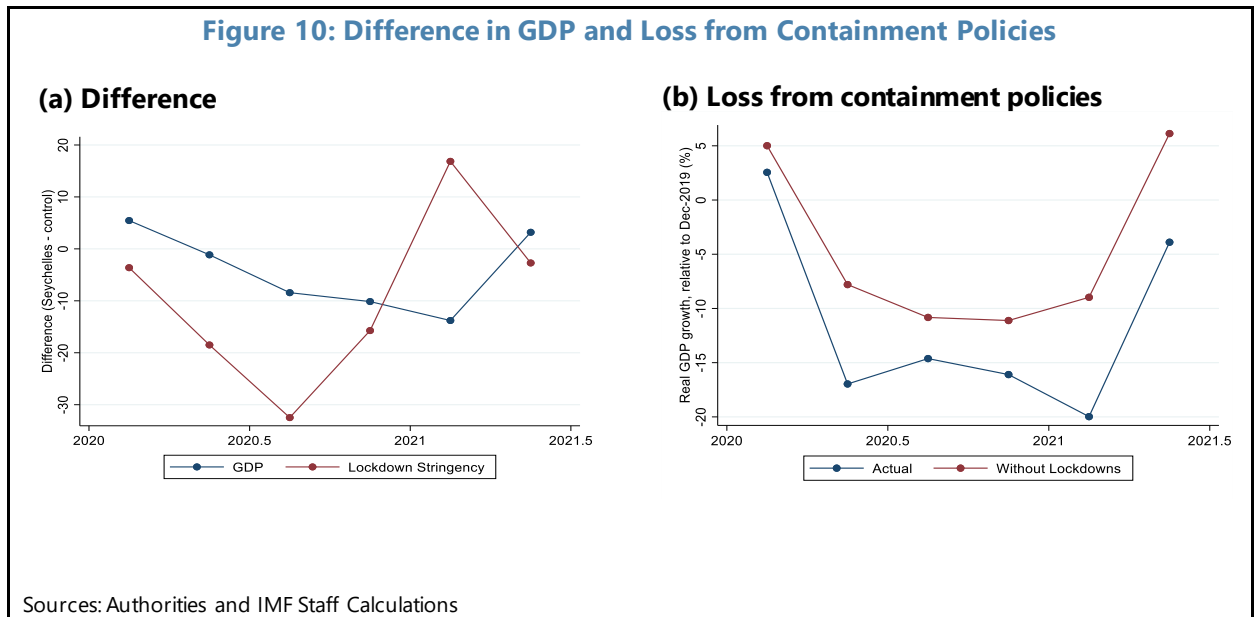
23. Figure 9(a) plots real GDP relative to the pre-pandemic level for Seychelles and the reference country (control). When the containment policies were initially implemented, the path of real GDP of Seychelles and the control tracked each other closely, both falling about 15 per cent in 2020Q2. Real GDP in Seychelles stayed depressed until 2021Q2, whereas the control recovered more quickly. Containment policies were less severe in Seychelles in the beginning of the pandemic, but stringency increased in 2021Q1, then loosened the next quarter (Figure 9(b)).

24. The island states were exposed to common external shocks during the pandemic, most notably the fall in tourists from other countries. We examine the difference in GDP growth between Seychelles and the control in each quarter and relate this to the difference

between containment policies in Seychelles and the control, using the Oxford Stringency Index. If the containment policies affected GDP growth negatively, we should see these two differences move in opposite directions.



25. Indeed, Figure 10(a) shows that over time, differences in GDP growth and differences in the Stringency Index between Seychelles and the control moved in opposite directions. In quarters where the Seychelles containment policies were relatively mild, GDP growth was high relative to the control. In quarters when containment policies were more severe, such as 2021Q1, growth was low relative to the control.



26. These patterns suggest that containment policies reduce economic output. Using a more robust regression framework in which we also control for COVID-19 cases in each quarter, we estimate a counterfactual GDP growth in the absence of containment policies between 2020Q1 and 2021Q2 (Figure 10(b)). Our estimates amount to a cumulative output loss of 10 per cent of pre-pandemic GDP.

27. There are two drawbacks to the synthetic control method. First, estimates can be sensitive to the weights assigned to individual countries. Second, it uses only a limited number of observations. As a second method, we therefore perform a similar analysis using panel data from all three other island states. Reassuringly, this method delivers similar results, estimating a cumulative output loss of 9 per cent of pre-pandemic GDP.

28. Our results are subject to a couple of caveats, implying that the estimated output loss forms a lower bound. First, we assume that potential output equals real GDP in December 2019 and is constant in the short run. Second, we assume that containment policies only affect the *level*, and not the *growth* rate of GDP, abstracting from long-term scarring effects. In many countries, the pandemic has led to lower labor force participation rates. If these remain depressed, the pandemic and lockdowns could lead to permanently lower levels of output.

E. Conclusion

29. In conclusion, this paper has quantified the impact of the containment and closure policies implemented in Seychelles to address the spread and the associated effects of the COVID-19 pandemic. By adopting a synthetic control method, the temporal problem of containment measures implemented within and across countries is addressed, providing a solid base to gauge the effects of the policies within Seychelles. The analysis indicates that containment and closure policies contributed to further GDP decline, as would otherwise have been the case without such policies. Overall, the research suggests a cumulative counterfactual loss of 10 per cent of pre-pandemic GDP. A different panel estimate that uses the same intuition validates the findings, yielding a 9 per cent counterfactual loss of pre-pandemic GDP. Overall, the insular nature of Seychelles makes it very susceptible to external shocks. The COVID-19 pandemic is yet another example of this vulnerability. Therefore, the authorities need to be mindful that containment and closure policies adversely impact economic activity should they be implemented again for a prolonged period – both within and across countries.

Annex I. Empirical Assessment of the Economic Loss from Covid-19 Containment Policies in Seychelles

1. The challenge. Suppose we want to know the effect of the Seychelles containment policies on real GDP. We assume containment policies shrink GDP by a factor s_t , reducing the level of GDP relative to its potential Y^* :

$$Y_t = s_t Y^* \epsilon_t,$$

where Y_t is real GDP in Seychelles at a given time t . ϵ_t captures other shocks to GDP, such as external demand. We assume s_t takes the form

$$\ln s_t = \beta_1 \text{lock}_t,$$

where lock_t is a variable measuring the severity of the containment policies. Expressing real GDP in percentage changes relative to December 2019 gives

$$y_t \approx \alpha + \beta_1 \text{lock}_t + \tilde{\epsilon}_t,$$

where α is trend growth. Intuitively, we are comparing the GDP growth of Seychelles in quarters with and without containment policies. Note that we assume trend growth is unaffected by the containment policies.

2. We run into several issues, however. First, authorities do not impose containment policies exogenously but in response to rising COVID-19 cases (Caselli et al., 2020). An estimated negative β_1 could simply reflect the effect of rising cases and self-isolation on economic activity, even in the absence of the Seychelles containment policies. To address this form of omitted variable bias, we control for the number of COVID-19 cases:

$$y_t = \alpha + \beta_1 * \text{lock}_t + \beta_2 * \text{cases}_t + \tilde{\epsilon}_t.$$

3. The second issue is that at the same time, other countries are also imposing lockdowns. This leads to a fall in tourist arrivals, even in the absence of the Seychelles lockdown. It is therefore more appropriate to think of real GDP growth depending on a time-specific effect γ_t , as well as on the lockdowns and COVID-19 cases:

$$y_t = \alpha + \gamma_t + \beta_1 * \text{lock}_t + \beta_2 * \text{cases}_t + \tilde{\epsilon}_t.$$

Note that we cannot estimate this equation with just data from Seychelles. Without additional data from other countries, there is no way to know whether the lower GDP growth in a period is due to the lockdown or due to an external shock (low γ_t).

4. Synthetic control. Suppose there is another country that is similar to Seychelles in terms of its external environment but imposes lockdowns at different time periods. For both countries, now indexed by i , we have

$$y_{it} = \alpha + \gamma_t + \beta_1 * lock_{it} + \beta_2 * cases_{it} + \tilde{\epsilon}_{it} .$$

Use the indices 1 for Seychelles and 2 for the reference country. Taking the difference between GDP growth in the two countries in each period gives

$$y_{1t} - y_{2t} = \beta_1(lock_{1t} - lock_{2t}) + \beta_2(cases_{1t} - cases_{2t}) + \tilde{\epsilon}_{1t} - \tilde{\epsilon}_{2t} .$$

Using data on GDP growth, lockdowns and cases from both countries we can now consistently estimate β_1 . We provide details on data sources and variables in Table 3.

5. We construct the reference country as a synthetic control unit (Abadie et al., 2010). Consider N countries that can potentially serve as a control. Each country is assigned the weight w_n that minimizes

$$\sum_{\tau} [y_{1\tau} - \sum_{n=1}^N w_n y_{n\tau}]^2$$

where τ are the pre-COVID-19 time periods. The weights sum up to one. Table 1 summarizes the estimated weights for the three tourist-dependent island states that we are considering, namely Bahrain, Dominican Republic and Mauritius.

Weights of the Tourist-Dependent Island States	
Country	Weight (%)
Bahrain	65
Dominican Republic	10
Mauritius	25
Sources: Authorities and IMF Staff Calculations	

6. Figure 11 shows that the synthetic control closely tracks the Seychelles economy before the lockdowns. With the weights in hand, we also construct other variables (growth, lockdowns, number of cases) of the synthetic control during the pandemic. Table 2 summarizes the regression of the synthetic control method.

7. A Panel with the Intuition of a Synthetic Control. Drawbacks of the synthetic control approach are that (i) it leaves us with only as many observations as we have quarters, and (ii) estimates are sensitive to the weights assigned to individual countries. For more power and as a robustness check, we can do a panel analysis that uses the same intuition. For the N candidate countries indexed i , we estimate:

$$y_{1t} - y_{it} = \alpha_i + \beta_1(lock_{it} - lock_{1t}) + \beta_2(cases_{1t} - cases_{it}) + \tilde{\epsilon}_{1t} - \tilde{\epsilon}_{it} ,$$

where α_i is a country-specific fixed effect that captures differences in trend growth between Seychelles and the country. Table 2 summarizes the regression of the panel method.

8. The loss of activity resulting from the Seychelles lockdowns. Let $\Delta\hat{y}_{1t}$ be the loss of activity resulting from the lockdown in Seychelles at time t. This is estimated in percentage points as

$$\hat{y}_{1t} = \beta_1 * lock_{1t} .$$

The total loss of output as a percentage of pre-pandemic GDP is then estimated as

$$\frac{1}{4} \sum \beta_1 * lock_{1t} ,$$

where we sum over quarters.

Synthetic Control and Panel Results		
	(1) Synthetic Control	(2) Panel
β_1	-0.159 (-0.56)	-0.142 (-1.20)
β_2	114.2 (0.84)	50.61 (0.9.01)
<i>Observations</i>	6	18
<i>Number of quarters</i>	6	6
<i>Number of countries</i>	1	3
<i>Country FE</i>	N	Y
<i>t</i> statistics in parentheses		
Sources: Authorities and IMF Staff Calculations		

Data Sources		
Variable	Source	Details
Real GDP	Haver Analytics	<ul style="list-style-type: none"> - Quarterly, - Normalized to 100 for 2019Q4
Lockdowns	Oxford COVID-19 Government Response Tracker	<ul style="list-style-type: none"> - Lockdown Stringency Index, - Scale from 0 to 100 - Daily data aggregated to quarterly level
Cases	Oxford COVID-19 Government Response Tracker	<ul style="list-style-type: none"> - New cases - Normalized by population - Daily data aggregated to quarterly level
Sources: Authorities and IMF Staff Calculations		

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