



TECHNICAL ASSISTANCE REPORT

BARBADOS

Financial Stability Report

SEPTEMBER 2023

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Executive Summary

The mission focused on enhancing the joint Financial Stability Report (FSR) of the Central Bank of Barbados (CBB) and Barbados Financial Services Commission (FSC). It reviewed the latest available FSR and discussed the background analytical toolkit. Based on this, a one-week joint mission at the CBB and FSC, hosted by the CBB, consisting of a targeted workshop and meetings, was undertaken.

The FSR is the joint flagship product of the CBB and FSC in the financial stability area. Apart from technical aspects, the mission demonstrated how critical it is to collaborate, discuss, and bring together various economic and financial perspectives. As the FSR is an essential communication tool, it is crucial to provide a forward-looking, frank, and consistent financial stability risk assessment that is easy for readers to understand.

The mission provided several recommendations to the CBB and FSC. These covered the content and structure of the FSR and its related FSR processes, CBB's and FSC's internal and external communication, the development of the financial stability analytical toolkit, enhancement of economic research and the use of data sources and statistics. These outcomes reflect on both the structure of the organization in the CBB and FSC concerning the financial stability agenda and the composition of the financial system in Barbados that is dominated by commercial banks (52% of the total financial system assets [TFA]) and credit unions (11% of TFA), but other segments of financial system are also significant – insurance companies (14% of TFA), mutual funds (10% of TFA), pension funds (9% of TFA), and finance and trusts companies (4% of TFA).

The preparation of a detailed FSR production plan is critical and could facilitate improvements and bring about synergies between different teams involved in the production. This plan needs to include various steps and set a firm publication date. To provide more up-to-date information, the CBB and FSC should also aim for semiannual FSR releases in the medium to long term.

The CBB and FSC should prepare the joint communication strategy to establish the report as the key financial stability communication tool. It needs to contain the central risk story based on the forward-looking, frank, and consistent financial stability risk assessment that is easy for readers to understand. The report can be strengthened in several ways to improve overall structure and readability. In particular, the report's structure should be changed to follow a top-down approach.

The CBB and FSC should continue working towards enhancing the financial stability analytical toolkit. Although, teams in both institutions have made a significant effort in developing financial stability analyses over the last years, the toolkit needs further enhancements to identify, monitor, and assess all relevant financial stability risks. The existing financial stability analytical toolkit should be revised to eliminate existing overlaps. Given the FSC's more limited resources, the lead should be taken by the CBB.

The top-down stress test is regularly performed and included in the report for deposit-taking institutions and insurance companies, but the CBB and FSC should further work on the methodological improvements. There has been good progress on implementing stress testing covering banks, credit unions, finance & trusts and insurance companies. Additionally, they benefited from CARTAC technical assistance on macro stress testing in February 2021. The solvency stress test could be further elaborated, especially for credit risk. The projection of market-consistent scenarios and development of other econometric models would allow to shift from a static to dynamic balance sheet stress test exercise, applying the same time horizon. Moreover, the stress test results in the FSR should highlight the financial system's resilience to systemic risk and identify measures/tools for addressing sources of systemic risk.

Moreover, it is important to enhance the relevant economic research. It was further highlighted that all available data sources should be explored and utilized to identify and assess key financial stability risks. In this respect, the possibility to use credit registers for statistical and financial stability work should be explored. In the meantime, the existing data gaps could be addressed through different industry surveys. Finally, the CBB potentially in conjunction with the FSC, should initiate a discussion and prepare an implementation plan for a data warehouse and software/tools to be used for processing large data (e.g., supervisory data) within the institution(s).

Recommendations	Priority	Timeframe ¹
The organizational and operational setup of the report and its communication		
1. Prepare the FSR production plan with the dates of different steps and establish a firm date for the final publication. Consider assigning the main responsibility for the FSR to the CBB while maintaining the cooperation with the FSC in terms of data and analysis.	High	Near term
2. Develop a communication strategy for the report to establish the FSR as the key communication tool. This strategy may include press conferences, presentations, discussions with market participants and analysts.	High	Near term
3. Organize cross-departmental discussion(s) before commencing the report drafting and maintain them during the drafting process.	High	Near term
4. Aim to target semi-annual FSR releases in the medium to long term.	Medium	Medium to long term
The structure of the report		
5. The broader macro-context and a more forward-looking perspective should be reflected in the report, which needs to be streamlined to convey the central story with the key messages that are clear and easy to understand for readers with limited knowledge of the financial system in Barbados.	High	Near term
6. Change the structure of the report to a top-down approach; start with the key risks and then elaborate on them in more detail. Add mission statements/themes to each paragraph and use boxes and annex(es) when appropriate.	High	Near term

¹Near term: < 12 months; Medium term: 12 to 24 months.

Recommendations	Priority	Timeframe ¹
<p>7. The revised report should include following sections: (1) Foreword, (2) Executive Summary, (3) Overview of the key risks for financial stability in Barbados, (4) Assessment of the internal and external macroeconomic environment and the potential implied tail risks, (5) Real sector assessment, including the property market, and (6) Financial sector assessment of all segments, including financial system infrastructure.</p>	High	Near term
The content of the report including the analytical toolkit and data sources		
<p>8. Include discussion of the regulatory framework, any potential planned changes, and policy actions that may impact financial stability risks.</p>	High	Near term
<p>9. Analyze the real sector as the key element of credit risks for deposit-taking institutions, which dominate the financial system in Barbados.</p>	High	Near term
<p>10. Revise the existing financial stability assessment framework to eliminate overlaps and further enhance the existing stress test methodologies.</p>	Medium	Medium term
<p>11. Clearly communicate the cut-off dates for different data sources, utilize the latest available information, including market data. Explore all existing data sources that have not been used so far, such as insolvency data, and initiate surveys within the industry to address the existing data gaps.</p>	High	Medium term
<p>12. Build up capacity to conduct economic research, including hiring additional staff with necessary skills to support financial stability analyses and assessments.</p>	High	Medium term
<p>13. Investigate and prepare an implementation plan for using credit registers for statistical and financial stability work in the future, including the calculating of default rates.</p>	Medium	Medium term
<p>14. Organize discussions and prepare an implementation plan for a data warehouse and software/tools for processing large data, such as supervisory data, in the future.</p>	Medium	Medium term

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Acronyms and Abbreviations

AFSI.....	Aggregated Financial Stability Index
BDIC	Barbados Deposit Insurance Corporation
BSI.....	Banking Stability Index
CARTAC.	Caribbean Regional Technical Assistance Centre
CBB	Central Bank of Barbados
FSC	Barbados Financial Services Commission
FSR	Financial Stability Report
GDP	Gross Domestic Product
LGD	Loss Given Default
LTI	Loan to Income ratio
LTV	Loan to Value ratio
NPLs.....	Non-performing loans
PD.....	Probability of Default
TFA.....	Total Financial Assets

Preface

At the request of the CBB and FSC, a CARTAC mission has been conducted in person from January 30 to February 3, 2023, to assist the authorities to enhance its financial stability report (FSR).

The mission was conducted by Mr. Petr Jakubik (LTX). The preparation meetings were conducted via phone calls.

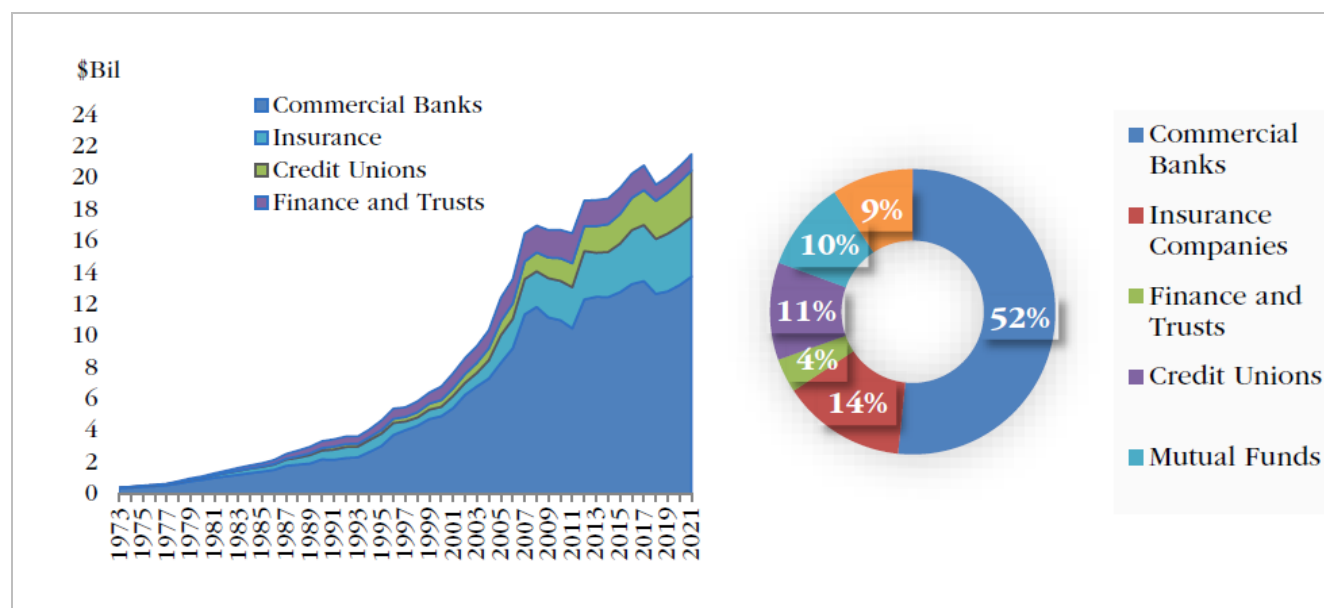
The mission met with the acting CBB Governor Alwyn Jordan, the FSC Chief Executive Officer (CEO) Mr. Warrick Ward, the CBB Director of Research & Economic Analysis Department Mr. Anton Belgrave, the FSC Manager of Research & Policy Ms. Melissa Burrowes, and all teams contributing to the FSR. The mission wishes to thank all CBB and FSC staff for their cooperation and productive discussions.

I. Introduction

1. **The main aim of the mission was to enhance the joint FSR of the CBB and FSC.** The FSR is the outcome of a collaboration between the CBB, FSC and Barbados Deposit Insurance Corporation (BDIC). It has been continuously published annually for the last decade. The mission reflected on the latest available release, which was published in October 2022, covering the year 2021. Overall, the regular publication of the report provides a positive signal to market investors and the public.

The financial system of Barbados is dominated by commercial banks and credit unions, which represent 63% of TFA. Additionally, insurance companies, mutual and pension funds play significant roles. This composition clearly sets up the priorities and required effort. Total financial assets in the Barbadian financial system represented 275% of GDP at the end of 2021. The financial sector is largely based on deposit-taking institutions, specifically commercial banks (52% of TFA) and credit unions (11% of TFA). However, other non-banking financial institutions also play an important role, including insurance companies (14% of TFA), mutual funds (10% of TFA), pension funds (9% of TFA), and finance and trusts companies (4% of TFA). The CBB and FSC have made gradual progress over the last years in setting up and monitoring key financial stability indicators that are regularly followed. However, further work needs to be done to advance the analysis for the banking sector and enhance the currently more limited capacity to perform financial stability analysis for credit unions, insurance companies and pension funds.

FIGURE 1. Distribution of Financial Sector Assets



Source: Central Bank of Barbados and Barbados Financial Services Commission, the left-hand panel is based on end-2021 data.

2. **The mission reflected on the organizational structure of the CBB and FSC.** The CBB is headed by a Governor, with the current Governor having taken up the role on March 1, 2023. Therefore, during the technical assistance mission, the bank was represented by the acting Governor (the Deputy Governor at the time of the mission). The financial stability role is allocated to the Research & Economic Analysis Department. The FSC is led by the Chief Executive Officer, and the financial stability role is entrusted to the Research & Policy team.

3. **Ahead of the mission, the CARTAC Financial Stability Adviser reviewed the latest available FSR.** This was complemented by discussions with the Director of the Research & Economic Analysis Department (CBB) and the Manager of Research & Policy (FSC).
4. **This preparatory work formed the basis of the mission, which comprised a targeted workshop and meetings.** The three-day workshop on the findings of the FSR review and best practices in financial stability analyses and assessments involved teams contributing to the FSR processes. It was complemented by the one-day targeted meetings between all teams individually and the CARTAC Financial Stability Adviser. The Director of the Research & Economic Analysis Department (CBB) and the Manager of Research & Policy (FSC) were present in all meetings/discussions, and training sessions. Wrap-up meetings with the acting Governor, Mr. Alwyn Jordan (CBB), the Chief Executive Officer, Mr. Warrick Ward (FSC); the Director of the Research & Economic Analysis Department (CBB) and the Manager of Research & Policy (FSC) were conducted. The high-level outcomes of the mission were presented and discussed at this final meeting. Overall, both the CBB and FSC management were very supportive during the mission and agreed with the recommendations proposed throughout the mission.

II. Key Elements of Financial Stability Reports

5. **The mission highlighted the key elements of good FSRs based on best international practices.**² The most important aspects and gaps in the current report were discussed. In this respect, the following elements were covered: aims, objectives, and reasons; overall assessments; coverage of issues; data, assumptions, and tools; structure and other features.
6. **FSRs should explicitly state their objectives.** The reports should aim to inform the public and encourage a constructive debate about financial sector developments and policies, holding public authorities accountable for their surveillance of the financial system. The information provided should facilitate a proper assessment of risks by investors active in the market.
7. **FSRs should be clear about what is meant by financial stability.** The definition should include a dynamic perspective: a financial system is stable not only when it is carrying out its essential functions and services, but when it is also capable of withstanding the shocks and strains that can be reasonably expected to affect it in the short and medium term. It is important that the report clarifies the operational benchmarks used to assess whether the system is stable, explaining what data, indicators, and type of information would be monitored for this purpose.
8. **The executive summary should be brief and easy to read.** A well-articulated executive summary is critical to inform and guide public opinion. Readers should not have to sift through the entire report to distill the main conclusions of the analysis. They should be able to understand the key messages of the report, even if they are not financially sophisticated. More advanced and technical material should be covered in the analytical chapters, preferably in boxes or annexes. The function of the executive summary is to bring together the various strands of analysis developed in the rest of the report, presenting a panoramic and honest view of risks and vulnerabilities, including politically sensitive risks. The executive summary should also discuss how these risks have evolved since the previous issue of the report and provide a summary of the key recommendations.
9. **FSRs should integrate macroeconomic and financial analysis.** This analysis should flow in both directions, assessing the key macroeconomic trends that can have an impact on the stability of the financial sector as well as the key financial sector developments that can, in turn, affect the real economy. The report should identify the main transmission channels that link the financial and real economy and assess, in quantitative terms, how shocks in one area could reverberate in the other areas.
10. **FSRs should not only explain but also properly justify the assumptions used.** This is especially relevant in the case of stress tests, whose meaning and interpretation depends critically on the assumptions made regarding the severity of the shocks, the speed and scale of the impact of shocks on default probabilities, the hurdle rates on capital and liquidity, dividend distribution, and other parameters of the test. Ideally, stress tests should be computed within a general equilibrium framework with the support of satellite econometric models that link macroeconomic and financial conditions. Simpler, partial-equilibrium, or even *ad hoc* tests can also be appropriate, and could be the inevitable consequence of capacity or data constraints, but any limitations of this choice should be described and explained.
11. **FSRs should indicate the data and methodology used and make them easily available.** The sources and cut-off date of the data should be indicated clearly and placed in an easily identifiable place. The data

² See Lim, Ch. H., Klemm, A. D., Ogawa, S., Pani, M. and Visconti, C. (2017) Financial Stability Reports in Latin America and the Caribbean, IMF Working Paper, 17/73.

displayed in the reports should also be made available to the public on the internet, on the same website where the reports are published. The methodology used for projections, sensitivity analyses, and stress tests should be explained in clear and simple terms in the text, with more technical details provided in special boxes or annexes. When analyzing the data, the report should consider not only aggregate and average measures but also distributional indicators and, where appropriate, extreme, or individual values (with proper safeguards to preserve confidentiality). This can include highlighting the position of the weakest or most vulnerable institutions or asset classes.

12. **The reports should follow a logical and integrated structure with unifying themes centered on the key risks.** The structure should enable the reader to identify which parts of the report contain specific information about different topics while facilitating the discussion of cross-cutting topics. The structure should be consistent over time to allow readers to compare assessments and should contain boxes or appendices dedicated to issues that either evolve slowly over time or reflect passing concerns. The reports should have an executive summary, several chapters devoted to external and domestic developments affecting the financial sector and changes in the financial infrastructure, including the regulatory and supervisory framework. It should preferably include a table of acronyms, a glossary of technical terms, a methodological annex, and a statistical annex.
13. **The publication of the reports should be supported by a well-designed communication strategy.** The current and past issues of the reports should be made available on the internet on a dedicated webpage that is easy to navigate and easy to find on the home page of the publishing authority. This webpage should also contain a database containing the data used, as well as links to other relevant publications and to other agencies and sources of information. The launch of the report should be supported by an outreach campaign aimed at disseminating the main messages and recommendations through audiovisual broadcasts, press releases, public presentations, and press conferences. The format and medium of the communication should be adapted depending on the intended audience. The publication of the report should follow a timely, regular, and predictable schedule. As financial sector conditions can change very rapidly, reports should be published within three months of the cutoff date for the data, preferably at least two times a year. The publication date should be announced in advance so that the readers know when to expect the next issue, and it should not change frequently. The past publication dates should also be clearly indicated on the website to enable the readers to know what information was available to the public at different times.

III. Organizational and Operational Setup of the Report and its Communication

Organizational and Operational Setup of the Report

14. **The FSR, as the flagship product of the CBB and FSC in financial stability, is the joint effort of both institutions.** The report is published regularly on an annual basis and is primarily the responsibility of the Research & Economic Analysis Department (CBB) and the Research & Policy team (FSC). However, both teams rely on data inputs from other teams. The CBB has a financial stability mandate by law in Barbados. Nonetheless, the responsibility for the FSR is shared between the CBB and FSC. Facilitating joint efforts between both authorities can sometimes be resource-intensive and time-consuming and may create unwanted consequences in terms of governance and accountability. Therefore, as an alternative setup, the CBB could be given the main responsibility for the FSR. This could be a more efficient solution, given financial stability is CBB's core mandate, and the technical capacity is higher at the CBB compared to the FSC. The CBB and FSC would still need to collaborate in terms of data and analysis, but ultimately, the CBB would be responsible for producing the report.
15. **The Research & Policy team (FSC) critically depends on inputs from the Credit Union, Pension and Insurance teams.** Therefore, it is important that the work on the report is well-coordinated within the institution, and all teams are fully committed to delivering their inputs on time.
16. **The FSR cycle and processes should be defined, including the communication strategy.** The publications should be regular and take place as communicated. In this respect, the FSR should have the highest priority as the joint flagship publication of the CBB and FSC.

Internal and External Communication

17. **The CBB and FSC should prepare a financial stability communication strategy to establish the report as the key communication tool in financial stability.** The report is currently published on the website. The CBB sometimes organizes a press conference, interviews with experts or discussion with market analysts. However, it is not done in a structured manner. In this respect, the publication should be promoted, and the key messages should be spelled out. To turn the report into a communication tool, steps should be taken in a regular and structured way, coordinated by both institutions. First, the CBB and FSC should prepare the joint communication strategy and promote the outcome of financial stability work spelled out in the FSR, for example, through active communication in the media and on social networks. Second, the foreword could be used to communicate the key messages by the Governor (CBB) and the Chief Executive Officer (FSC) to the market participants and public. Third, the CBB and FSC should regularly organize a joint press conference with participation of the Governor (CBB) and the Chief Executive Officer (FSC) and circulate an email to all relevant contacts with the highlights of the report, reflecting the main messages on the day of publication. Fourth, shortly after the publication, the CBB and FSC should also regularly organize a seminar with the market participants/analysts to discuss the key findings of the report. Fifth, all data displayed in the report in the form of charts or tables should be provided together with the report on the website.

18. **The CBB and FSC should set a firm publication date and target semi-annual releases in the medium to long term.** The report is currently published on an annual basis. However, going forward, the aim should be to move to semi-annual frequency. Potential obstacles related to data source availability could be addressed by splitting those two releases into one comprehensive (based on annual data) and one shorter release provided with the update on the key risks. This could be the medium to long-term target. Moreover, the dates of the releases should be set up as firm dates to manage public expectations.
19. **Apart from technical aspects, the mission demonstrated how critical it is to collaborate, discuss, and bring together various economic and financial perspectives.** There was no prior communication on the key topics before or during the drafting process to align the messages across the report. This fact is visible in the final version of the report, which is rather fragmented and does not provide a single story with clear messages. In this respect, the mission aimed to bring together all experts involved in the drafting process so that they understand how their topics fit to the overall report and how it should be changed towards a storytelling document. The teams need to cooperate closely to improve the report. To this end, the following steps would be beneficial to implement. First, the CBB and FSC should prepare the production plan/ roadmap of the FSR with exact dates and deadlines for all steps, responsibilities, and teams/ involvements, including the final publication day. Second, the CBB and FSC should ideally organize a joint cross-departmental discussion with high-level representation to discuss the key topics relevant for financial stability before starting the drafting. Third, the CBB and FSC should organize the expert meetings with the main risks/messages, involving all contributors before and during the drafting process. Fourth, the CBB and FSC should prepare a financial stability communication strategy. Fifth, the role of the Barbados Deposit Insurance Corporation (BDIC) should be clarified, and the BDIC should be involved in the respective processes accordingly.
20. **The production plan for the FSR needs to be prepared jointly with all departments/ teams involved in both institutions.** It is important that the production plan is discussed with all departments/ teams involved to obtain their views and commitment on timelines. The final plan needs to be adopted by the top management of the CBB and FSC to be respected by all departments/ teams involved.

IV. Structure of the Report

21. **The report should be streamlined using appropriate language that is understandable not only to supervisors or financial stability experts but also to the public.** The current report is rather descriptive and fragmented. It needs to follow the central story with the key messages that are clear and easy to understand for readers with limited knowledge of the financial system in Barbados.
22. **Information that is common for different parts of financial sector should be organized in the same way in different sections.** This is the case for example for banks and credit unions, which are prepared by different institutions and are visible in the report. However, they pursue a similar type of business, so they should follow the same logic, structure and indicators, when appropriate. Moreover, sentences starting with references to figures and tables should be avoided.
23. **The definition of financial stability is correctly set out in the beginning of the report in the Preface.** This should be kept as it is important for readers to understand how financial stability is seen by the CBB and FSC.
24. **As the FSR is an important communication tool, it needs to contain the central risk story based on the forward-looking, frank, and consistent financial stability risk assessment that is easy to understand to readers.** Overall, the report resembles a supervisory rather than a financial stability report. The report misses a central story that would connect different parts of the report. A macro-financial narrative on key risks and messages, together with the importance of the identified risks in the context of overall financial stability, is missing. Instead, the report provides descriptions of the various segments of the financial system without clear explanations of the conclusions. The report must be changed from a backward-looking, descriptive discussion to a forward-looking, risk-focused narrative. Simple descriptions of nominal figures should be replaced with explanations of the risks, and nominal indicators should be replaced with relative ratios.
25. **The report can be strengthened in several ways to improve overall structure and readability. In particular, the structure of the report should be changed to a top-down approach.** In this respect, it should start with the key risks that will be further elaborated in the subsequent section. Each paragraph could begin with a mission statement/ theme to provide more direction to the reader. Some less important or overly technical/detail explanations could be moved into annexes or special boxes introducing, for example, a new methodological work. The revised report should contain the following parts:
 - ◆ Foreword: providing the keys messages to be communicated by the Governor (CBB) and Chief Executive Officer (FSC).
 - ◆ Executive Summary: providing a good overview of the key risks and their assessment.
 - ◆ Overview of the key risks for financial stability in Barbados: outlining the key risks identified and further elaborated in the report.
 - ◆ The internal and external macroeconomic environment: focusing on the factors that might potentially form the adverse scenario and the materialization of tail risks.
 - ◆ The real sector assessment, including the property market with potential to affect the financial system.
 - ◆ Financial sector assessment and changes in the financial infrastructure, including on the regulatory and supervisory framework.
 - ◆ Table of acronyms, a glossary of technical terms, methodological and statistical annexes.
26. **The statistical annex could be used more extensively.** The current report contains a statistical annex with some key figures. This practice should be retained and perhaps further strengthened by moving more figures that are not crucial for the central story to the statistical annex.

27. **The stress test results should be incorporated into the chapter on the financial sector assessment, highlighting the financial system's resilience to systemic risk and identifying measures/tools for addressing sources of this risk.** Further details on the methodological framework and more detailed results could be provided in the annex. The real sector assessment chapter needs to be linked to the chapter on financial sector to provide a better idea, especially regarding credit risk and its expected development in the future.
28. **The research notes section is a good practice to be kept, but the conclusions need to be linked to the main risk story that should be introduced in the FSR.** The report contains the research notes section that elaborates more extensively on some up-to-date topics. This is a good practice in line with the approach taken by many central banks in advanced economies. However, the conclusions of the research articles should be integrated into the central story of the report. Hence, the references to those conclusions needs to be included in the main text of the FSR.

V. Content of the Report including the Analytical Toolkit and Data Sources

Content of the Report

29. **Although the FSR describes all segments of the financial system in Barbados, it must be further elaborated by adding also analyses of the real sector.** The current financial stability report broadly covers the entire financial system, including commercial banks, deposit-taking finance and trust companies, credit unions, insurance companies, mutual funds, and occupational pension plans. However, it needs to be connected with a macro-financial narrative on key risks and messages. The importance of the identified risks in the context of the overall financial stability needs to be assessed. Moreover, the analysis of the real sector, as the key element of credit risks for banks dominating the financial system in Barbados, is missing. In this respect, any vulnerabilities related to the balance sheets of corporates and households should be analyzed. It should consider all available data to cover aspects of solvency, profitability, activity, and liquidity for firms. For households, the focus should be on disposable income, unemployment, indebtedness, lending rates, and savings. Finally, the property market should be analyzed as it has a critical impact on credit risk, given that real estate is used as collateral for mortgages.
30. **The FSR should further highlight the interlinkages between the different components of the financial system.** The report contains the section on financial sector interconnectedness, covering cross-sectoral and cross-border analyses. This includes commercial banks, credit unions, finance & trust companies, insurance companies, pension funds and investment pools & unit trusts. However, the constructed network could be further used to assess the financial system under different adverse scenarios to better understand whether any potential adverse contagion behaviors could pose risks for financial stability.
31. **Moreover, the evolving fiscal and monetary policy context should be assessed when preparing the report.** As the Research & Economic Analysis Department (CBB) covers both financial stability and monetary policy, the interaction between financial stability and monetary policy agenda could be strengthened.
32. **A description of the relevant element of the existing regulatory framework for different segments of the financial system should be added.** Interpreting the reported indicators may be challenging for the reader who are not familiar with the financial system in Barbados, as a description of the relevant aspects of the regulatory framework, such as the extent to which the framework is market-sensitive with a risk-based capital approach is absent. This is particularly relevant for non-bank financial institutions, where regulations vary among the Caribbean countries compared to banks. For example, the provided nominal values of assets and liabilities without offering any explanation on the extent to which a market-sensitive valuation applies does not bring any value. Moreover, all ratios and indicators used should be accompanied by their definitions, which is not always the case (e.g., the liquidity asset ratio for commercial banks or transferable deposits).
33. **The analysis of credit unions needs to be strengthened.** Credit unions share many similarities with banks, so the same indicators should be approached in the same way. It is not clear why the breakdown by duration is monitored for credit unions instead of classifying of loans by type (e.g., corporate loans, mortgages, consumer loans, etc.).
34. **A more in-depth analysis of the insurance sector is required.** The current analysis of the insurance sector is largely descriptive, with a complete absence of risk messages. Given the significant role of interest rate in the sector, it is important to discuss how the current yield increases, coupled with high inflation, may affect the sector. Additionally, information about the prevailing types of reinsurance (i.e., proportional or non-

proportional) should be added, as these have different risk implications. In this respect, a CARTAC technical assistance mission is scheduled for July 2023 to assist the FSC in enhancing staff capacity for systemic risk monitoring in the insurance sector, including actuarial expertise.

35. **Similarly, the pension section needs to be more elaborated.** The current section provides only a few descriptive statistics without any interpretation of potential risks. The fundamental question of whether the pension schemes are defined benefit (DB) or defined contribution (DC) is not addressed, even though this determination can have significant implications for financial stability.

Financial Stability Analytical Toolkit

36. **The CBB and FSC need to further to enhance their toolkit to identify, monitor, and assess all relevant financial stability risks.** The institutions should continue to build up capacity to monitor especially credit risk for deposit-taking institutions while disaggregating relevant indicators to track various risk drivers, such as loans to corporates, mortgages, and consumer loans to households. Additionally, utilizing a cross-sectoral interconnectedness network can provide insight into how different adverse shocks may transfer among different segments of the financial system, highlighting the importance of interconnections between them.

37. **The existing financial stability analysis toolkit should be revised to avoid all existing overlaps.** The information provided by the Aggregated Financial Stability Index (AFSI), Banking Stability Index (BSI) and Cobweb for determining financial stability risks requires careful interpretation. There are many noticeable overlaps between these indices, with some components covering only the banking sector. In Cobweb, it appears that the financial system is solely represented by banking indicators, such as the Capital Adequacy ratio and Return on Assets, which are also presented in BSI. Another example is the Financial Soundness Component of AFSI, which includes metrics like Capital to Total Risk-Weighted Assets, Liquid Assets to Total Assets and NPL to Total Loans seems to only cover the banking sector, overlapping with BSI components. Therefore, there is a need to streamline these indicators to accurately represent the entire financial system in Barbados, as it encompasses more than just the banking sector. Furthermore, since indicators cannot encompass all aspects, expert judgement should complement them. The current report style, which mechanistically describes the results of these indices, should be replaced by the central risk narrative supported by findings from various indicators.

38. **Exploration of new key indicators for financial stability is essential.** The CBB and FSC should consider monitoring indicators as default rates, average probability of default (PD), loss given default (LGD), insolvency rates in available granularity (mortgages, consumer loans, corporate loans, etc.). Additionally, the information on loan-to-value ratio (LTV) or debt-to-income ratio (DTI) should be monitored. It is also worthwhile to explore an indicator that assesses the insurance protection gap. In cases where necessary data is currently unavailable, alternative proxy indicators should be investigated for use until the required data becomes available.

39. **While the CBB and FSC regularly perform banking top-down stress tests, they should focus on methodological improvements.** There has been significant progress in implementing stress test for deposit-taking institutions, including commercial banks, finance and trust companies, credit unions and insurance companies, facilitated also by the CARTAC technical assistance on stress testing in February 2021. The 2021 FSR presented results of solvency and liquidity stress tests based on various scenarios. Solvency stress test covers also underwriting risk employing the scenario assuming an increase in claims. However, the methodology is based on the first-generation top-down stress tests using a static balance sheet approach.³

³ See Cihak, M. (2007): Introduction to Applied Stress Testing, IMF Working Paper 07/59.

40. **The solvency stress test for banks and credit unions can benefit from further elaboration, particularly in assessing credit risk.** The current implementation of solvency stress test for banks and credit unions is based on single-shock scenarios, which include interest rate increases, provisioning adjustments, NPLs increases, and default of the five largest exposures (commercial banks and finance and trust companies) and the top 25 borrowers (credit unions). The provisioning and NPL increases are introduced arbitrarily as a mechanistic upward move by 25%, 50%, 75% and 100% for provisions; respectively 50%, 100%, 150%, and 200% for NPLs in commercial banks, and finance and trust companies; and 25%, 50%, 75%, 100%, 125%, 150%, 175% and 200% for NPLs in credit unions. None of these shocks are derived from a consistent macro-financial model. An opportunity for improvement lies in developing market-consistent scenarios based on a macroeconomic model and establishing links between financial variables, such as NPLs, through estimated econometric models. Additionally, the credit risk calculation can be enhanced by breaking it down for corporates, personal consumer loans and mortgages. To facilitate a transition towards employing multiple shock scenarios with a broader range of stressed factors, the CARTAC has scheduled technical assistance focused on solvency stress testing for deposit taking institutions during the period from 31 July to 11 August 2023.
41. **The projection of market-consistent scenarios and the development of econometric models would facilitate the transition from a static to a dynamic stress test exercise, while applying the same time horizon.** The current stress test exercise does not consider any time horizon, operating as a static exercise with instantaneous simple shocks that immediately reflect on the balance sheet of deposit-taking institutions. The CBB and FSC should focus on generating a market-consistent macroeconomic scenario, potentially using an adjusted macroeconomic projection employed for monetary policy purposes to account for potential tail risks. This scenario should be severe enough to be relevant from a financial stability perspective while remaining plausible. This will be further discussed with the CBB and FSC during the aforementioned CARTAC technical assistance mission on stress testing. Furthermore, by estimating satellite econometric models, the scenario can be linked to key bank balance sheet items, in particular NPLs. Such models could be estimated either using only data for Barbados when historic times series are sufficiently long or panel data covering several relevant countries.⁴
42. **The assumption of fire sales of different asset classes could further enhance the current employed liquidity stress testing framework.** The liquidity stress test for banks elaborates a scenario of a continuous daily 5%, 10% and 15 % outflow of deposits, respectively. For credit unions, the test is designed to assess the impact of a “run” on members’ savings using the same assumption as for banks. When the results are reported, they should be complemented by the information on the institutions which failed the test, in terms of their market share – for example, the failure of one institution out of how many and its corresponding share of total assets of the sector. The CBB and FSC could also incorporate the assumption of fire sales that would imply some haircuts on different type of assets. However, as liquidity risk does not seem to be the major issue for the deposit-taking institutions in Barbados so far, this might have rather lower priority.
43. **The FSC staff headcount working on financial stability issues needs to be strengthened.** The staff working on financial stability issues is more limited in the FSC compared to the CBB. The staff is rather junior, with limited knowledge of insurance and only one actuary in the team. However, the team have managed to set up and run an insurance stress test based on two scenarios. The first one assumes an increase in claims (underwriting risk), and the second an economic downturn corresponding to a downward shift in the yield curve of 300 basis points, 25% drop in real estate values and mortgages, and 30% fall in the value of equity securities. Finally, a multiple shock scenario assuming a combination of both economic downturn and claims shock is performed. Similarly, as for deposit taking institutions, the scenario is set up arbitrarily and not derived from any internally consistent macro-financial model. To build capacity of the FSC in the area of insurance, the aforementioned targeted follow-up CARTAC technical assistance is scheduled for July 2023.

⁴ See e.g., Beck R., Jakubik, P., Piloiu, A. (2015): “Key Determinants of Non-performing Loans: New Evidence from a Global Sample”, *Open Economies Review*, Springer, vol. 26, no. 3, pp. 525-550.

44. **Economic research is important for the further enhancement of the financial stability analytical toolkit.** The capacity for conducting economic research to develop econometric models underpinning financial stability analyses and assessments is limited. This is especially the case for the FSC. The situation is better for the CBB, but the current research does not really cover financial stability. The CBB could cooperate with the FSC and lead the research for the entire financial sector. To facilitate those activities, the CBB should hire additional headcount(s) with necessary skills to support financial stability analyses and assessments.
45. **Strengthening the analytical toolkit will allow the provision of more in-depth financial stability analyses and assessments in the report.** The toolkit is critical for the quality and rigor of the report. It will also provide the CBB and FSC more credibility with potentially better impact on markets participants, limiting systemic risk by positively influencing them.

Data Sources and Statistics

46. **All relevant available data sources should be utilized to identify and assess key financial stability risks.** The report mostly uses balance sheet data for financial institutions that are available at year-end. Since the report is typically published in October, there is about a 3-quarter lag between when data becomes available and when the report is published. This could render the report outdated, especially during times of market turbulence. To address this issue, more recent financial market data should be incorporated before the final publication. Furthermore, the report does not have to adhere to the same cutoff date for all data sources, as doing so may result in lost information. Nevertheless, all cutoff dates for different data sources should be clearly stated in the report. Additionally, exploring the use of relevant external data sources, such as insolvency data, should be considered.
47. **An implementation plan for utilizing credit registers in statistical and financial stability work should be prepared and delivered.** Credit registers represent a unique data source that is indispensable for conducting in-depth financial stability analysis and assessment. They provide information on observed PDs and LGDs. These data can be used to calculate indicators such as default rates or average LGDs for different loan portfolios. Given the predominant role of deposit-taking institutions in the Barbadian financial system, credit risk is crucial for a comprehensive financial stability assessment. To this end, the CBB, in cooperation with FSC, should ensure that credit register(s) are established in a manner that facilitate their use for a comprehensive statistical analysis, expending beyond individual case supervision. Leveraging this significant data source(s) would significantly enhance the quality of the report.
48. **The CBB and FSC should develop an implementation plan on a data warehouse and software/tools to be used for a processing of large datasets.** Currently, the CBB possesses a wide range of data, especially comprehensive supervisory data; however, these data are not consistently organized. Data processing primarily relies on Excel, with some attempts to use R Studio for analytical purposes. The absence of a data warehouse in the bank significantly restricts the utilization of existing data for analytical purposes. Therefore, the discussion on the organization of data and the implementation plan of a data warehouse with the mirroring database to be used for analytical purposes should be prepared. The selected platform should offer flexibility to perform complex analytical tasks. In this context, the financial stability toolkit should employ all relevant micro data that are available, such as data from payment system or data from credit register(s) once it is set up. Hence, the CBB and FSC need to discuss and select software tools that will be used for this purpose. Consequently, the CBB and FSC should train or hire staff able to work with large data in the context of financial stability. As the FSC has more limited resources, the CBB could also potentially help to work on data for the FSC. The potential outcome of such a move should be utilized in the report.

49. **The existing data gaps could be addressed through various surveys initiated with the industry.** Currently, numerous data gaps hinder the CBB and FSC conducting more comprehensive financial stability assessments. To overcome this limitation, the CBB and FSC could initiate a survey with the industry, particularly focusing on credit risk, given its prominent role in the financial system, and on cyber risk, as a new emerging risk that is not monitored. For example, credit risk could be addressed, through a bank-lending survey.
50. **Such surveys should collect all crucial missing information related to the key financial stability risks, especially in relation to credit risk.** This approach might also partially address the current lack of use of credit register(s). The surveys could cover especially the following information:
- ◆ Average PD/default rate for corporate loans, consumer loans and mortgages;
 - ◆ Average loss given default for corporate loans, consumer loans and mortgages;
 - ◆ Average lending rates for corporate loans, consumer loans and mortgages;
 - ◆ Information for corporates could potentially be further broken down to SMEs and large corporates;
 - ◆ Information on type of collateral – real estate, other assets, etc.
 - ◆ Average deposit rates.
51. **Another potential survey could address the lack of information on cyber risk.** It could cover for example the following information:
- ◆ Number of cyber incidents with the impact exceeding the defined threshold,
 - ◆ Total losses related to cyber incidents,
 - ◆ The information could be potentially broken down by type of cyber incidents e.g., malware attack, phishing attack, insider threat, etc.
52. **Any additional information or survey that could help to address the current data gaps based on identified risk should be further considered.** This may encompass potential new emerging risks or unaddressed data gaps beyond the ones mentioned earlier.

V. Conclusions

53. **The CARTAC technical assistance encompassed a comprehensive review of all pertinent aspects aimed at enhancing the joint FSR of the CBB and FSC.** This review covered the organizational and operational setup, communication strategies, report structure, content, analytical tools, and data sources. The mission's objective was to provide recommendations that could influence the report, both directly and indirectly, by enhancing the quality of analyses and risk assessments.
54. **The mission determined that the development of a detailed FSR production plan is critical and has the potential to facilitate improvements and synergies among various experts involved in the report's production.** This plan should outline different steps and establish a firm publication date. Furthermore, it should involve discussions with all departments and teams in both the CBB and FSC to obtain their inputs and commitments regarding timelines. To provide more up-to-date information, the CBB and FSC should also target semiannual FSR releases in medium to long-term. Additionally, it could be considered to give the main responsibility for FSR to CBB keeping the cooperation with FSC in terms of data and analysis.
55. **The preparation of a communication plan on the report is another important step that needs to be taken by the CBB and FSC.** The report should be established as the key communication tool. In this respect, a press conference and further subsequent presentations of the report should be organized on a regular basis. Apart from the external communication, it is critical to maintain extensive internal communication among different teams and experts contributing to the report in an organized manner.
56. **The broader macroeconomic context and a more forward-looking perspective should be reflected in the report that needs to be streamlined to follow the central story with the key messages that are clear and easy to understand to readers with limited knowledge on the financial system in Barbados.** This could be facilitated by the change of the report's structure to top-down. In this respect, it should start with the key risks and then elaborate on them in more detail. The report would be also easier to read by adding mission statements/themes to each paragraph. For more descriptions of some new methodological improvements or more specific topics, the report should use boxes and some more detailed information, especially statistics could be moved to annex(es) when appropriate. The revised report should contain a foreword, executive summary, overview of the key risks for financial stability in Barbados, the internal and external macroeconomic environment and the potential implied tail risks, the real sector assessment including the property market, and financial sector assessment of all segments including financial system infrastructure.
57. **The report should reflect all important elements of financial stability assessment, such as the regulatory framework and the analysis of the real sector.** A clear understanding of the regulation will allow readers to properly interpret all indicators provided in the report. Additionally, the analysis of the real sector is crucial, especially as it pertains to credit risk for deposit-taking institutions dominating the financial system in Barbados.
58. **The quality of the report could also be improved by revising the existing financial stability analytical toolkit.** This includes addressing the existing overlaps, making further enhancements of stress test methodologies, and refining credit risk analysis. In this context, the relevant financial stability economic research plays an important role and should, therefore, be strengthened. To facilitate this work, a discussion on setting up a data warehouse and appropriate tools/software to process large data (e.g., supervisory data) should be organized, and the implementation plan prepared.
59. **Finally, the mission reviewed and provided recommendation on the use of existing as well as potential new data sources that should be fully utilized for financial stability purposes.** The report should extend

its use of data sources to the latest available information. The cut-off dates should be clearly communicated for different data sources, and some existing data gaps could be addressed by conducting different surveys. Finally, an implementation plan for using credit register(s) for statistical and financial stability work should be prepared.