Resilience and Growth in the Small States of the Pacific

EDITORS
Hoe Ee Khor, Roger P. Kronenberg, and Patrizia Tumbarello

INTERNATIONAL MONETARY FUND
Note to Readers

This is an excerpt from *Resilience and Growth in the Small States of the Pacific*.

Economic growth in the small island states of the Pacific has been disappointing for more than a decade. Among Pacific island countries recovery from the global financial crisis has also generally lagged that in Asian low-income and emerging market countries. What are the factors that have contributed to the low rates of economic growth in the region? Are there specific policies that could help enhance resilience and raise growth performance in a way that is both inclusive and sustainable?

This book examines the factors that have contributed to the low rates of economic growth in the region and seeks to identify policies that could help enhance resilience and raise growth performance in a way that is both inclusive and sustainable. Chapters are grouped in four sections, examining growth and resilience, spillovers and vulnerabilities, macroeconomic policy, and structural impediments to growth. The main message is that there is scope for the Pacific island countries to strengthen the policy environment and improve growth performance.

This excerpt is taken from uncorrected page proofs. Please check quotations and attributions against the published volume.

*Resilience and Growth in the Small States of the Pacific*
Edited by Hoe Ee Khor, Roger P. Kronenberg, and Patrizia Tumbarello
ISBN: 9781513507521
Pub. Date: Spring 2016
Formats: Digital, Paperback, 7x10 in., 460 pp.
Price: $35

For additional information on this book, please contact:
International Monetary Fund, IMF Publications
P.O. Box 92780, Washington, DC 20090, U.S.A.
Tel: (202) 623-7430 • Fax: (202) 623-7201
Email: publications@imf.org
www.imfbookstore.org

© 2016 International Monetary Fund
Resilience and Growth in the Small States of the Pacific
Resilience and Growth in the Small States of the Pacific

FIJI
TONGA
FEDERATED STATES OF MICRONESIA
MARSHALL ISLANDS
KIRIBATI
PALAU
INDONESIA
PAPUA NEW GUINEA
SOLOMON ISLANDS
AUSTRALIA
NAURU
TUVALU
VANUATU
SAMOA
TIMOR-LESTE
PHILIPPINES
Hawaii (U.S.)
Ngerulmud
Palikir
Honiara
Yaren
Port Moresby
Dili
Port Vila
Suva
Nuku'alofa
Apia
Majuro
Tarawa
Funafuti

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

©International Monetary Fund. Not for Redistribution
Resilience and Growth in the Small States of the Pacific

EDITORS
Hoe Ee Khor, Roger P. Kronenberg, and Patrizia Tumbarello
Contents

Foreword vii
Preface ix
Acknowledgments xiii
Contributors xv

Part I Setting the Stage: The Quest for Resilience and Growth in the Pacific Islands 1

1 | Economic Growth in the Pacific Island Countries—Challenges, Constraints, and Policy Responses ............................................................................................................. 3
   Roger P. Kronenberg and Hoe Ee Khor

2 | Raising Potential Growth and Enhancing Resilience to Shocks ...................................... 15
   Ezequiel Cabezon, Patrizia Tumbarello, and Yiqun Wu

3 | Building Resilience in the Pacific Island Countries .......................................................... 39
   Lino Briguglio

4 | The Pacific Speed of Growth: How Fast Can It Be and What Determines It? .................... 45
   Yongzheng Yang, Hong Chen, Shiu Raj Singh, and Baljeet Singh

5 | Strengthening Macro-Fiscal Resilience to Natural Disasters and Climate Change in the Small States of the Pacific .................................................................................. 71
   Ezequiel Cabezon, Leni Hunter, Patrizia Tumbarello, Kazuaki Washimi, and Yiqun Wu

Part II Managing External Spillovers, Shocks, and Vulnerabilities 95

6 | Global and Regional Spillovers to Pacific Island Countries .............................................. 97
   Fazurin Jamaludin, Niamh Sheridan, Patrizia Tumbarello, Yiqun Wu, and Tlek Zeinullayev

7 | Major Economic Shocks and Pacific Island Countries during the Global Economic Crisis ......................................................................................................................... 131
   Patrick Colmer and Richard Wood

8 | Drivers of Inflation in the Pacific Island Countries .............................................................. 151
   Xuefei Bai, Patrizia Tumbarello, and Yiqun Wu

9 | Vulnerabilities of Isolated Small Island States in the Pacific ............................................. 163
   Chris Becker

Part III Tailoring Macroeconomic Policies to the Small States of the Pacific 187

10 | Strengthening Fiscal Frameworks and Improving the Spending Mix in Small States .......... 189
    Ezequiel Cabezon, Patrizia Tumbarello, and Yiqun Wu

11 | Estimating Fiscal Multipliers Using a Simplified General Equilibrium Model of Small States, with Application to Kiribati and Palau .............................................. 213
    Sergei Dodzin and Xuefei Bai

©International Monetary Fund. Not for Redistribution
12 | Monetary Policy Transmission Mechanisms in Pacific Island Countries ........................................... 229
   Yongzheng Yang, Matt Davies, Shengzu Wang, Jonathan Dunn, and Yiqun Wu

13 | Global Commodity Prices, Monetary Transmission,
     and Exchange Rate Pass-Through ................................................................. 249
     Shanaka J. Peiris and Ding Ding

14 | The Role of Excess Liquidity and Interest Rate Pass-Through
     for the Monetary Transmission Mechanism in the Pacific ............................. 261
     Jan Gottschalk

Part IV Removing Structural Impediments to Growth ...................................................... 273

15 | Planning Public Financial Management Reforms in Pacific Island Countries ...................... 275
     Tobias Haque, Richard Bontjer, Mary Betley, and Ron Hackett

16 | Pacific Island Countries: Trade Integration in a Changing Global Economy .................... 289
     Hong Chen, Lanieta Rauqeuqe, Shiu Raj Singh, Yiqun Wu, and Yongzheng Yang

17 | Determinants of Interest Rate Spreads in the Solomon Islands ........................................ 315
     Nooman Rebei

18 | Interest Rates, Bank Profitability, and Capital Adequacy in the South Pacific .................. 331
     Matt Davies, John Vaught, and Ezequiel Cabezon

Appendix 1 Fiji ..................................................................................................................... 357
Appendix 2 Kiribati ............................................................................................................... 363
Appendix 3 Marshall Islands ............................................................................................... 369
Appendix 4 Micronesia ......................................................................................................... 375
Appendix 5 Palau .................................................................................................................. 381
Appendix 6 Papua New Guinea ............................................................................................ 387
Appendix 7 Samoa ............................................................................................................... 393
Appendix 8 The Solomon Islands .......................................................................................... 399
Appendix 9 Timor-Leste ...................................................................................................... 405
Appendix 10 Tonga ............................................................................................................... 411
Appendix 11 Tuvalu .............................................................................................................. 417
Appendix 12 Vanuatu .......................................................................................................... 423

Index ..................................................................................................................................... 429
Foreword

Policymakers in the small Pacific states face unique challenges in increasing their growth potential. These countries tend to be highly remote and dispersed, exposed to severe shocks, vulnerable to natural disasters and the effects of climate change, face infrastructure gaps, and have very narrow production and exports bases. These problems are particularly acute for microstates—countries with populations under 200,000. Capacity constraints are a key challenge for all small Pacific states.

Recognizing these challenges, continuous engagement with Pacific islands has long been a priority for the IMF. In 1993 it established the Pacific Financial Technical Assistance Center—the first of the IMF’s regional technical assistance centers—to help foster capacity building with the support of development partners. The IMF’s work in the region has intensified in recent years, particularly amid its growing engagement in small states. This can clearly be seen in the production of major analytical studies on small-state issues, high-level conferences focusing on the most pertinent policy questions small states face, and the more visible participation of IMF management in high-profile events involving small states. The IMF recently issued a guidance note—tailored to the particular conditions of small states—to better inform IMF staff working in these countries.

Resilience and Growth in the Small States of the Pacific gathers recent analytical work on the challenges Pacific island countries face and the policy responses they could consider to overcome them. Many of the chapters in this book are based on papers that were presented and discussed during two high-level regional conferences on the Pacific islands, jointly organized by the IMF and the governments of Samoa in 2012 and Vanuatu in 2013. They have thus benefited from the views and insights of the conference participants, which included policymakers, leading scholars specializing in small states and Pacific island issues, and representatives from the donor community and private sector. The policy advice in this book contributes significantly to the literature on the best policy options for decision makers in Pacific island countries and for small states generally.

This book raises awareness about the challenges faced by Pacific island countries, and offers policy options that should help authorities overcome their development needs and leverage their full potential in achieving inclusive and sustainable growth.

Min Zhu
Deputy Managing Director
International Monetary Fund
This page intentionally left blank
Preface

Economic growth in the small island states of the Pacific has been disappointing for more than a decade.1 During the 10 years leading up to the 2008–09 global financial crisis, real GDP growth for the group averaged just 2 percent a year, considerably lower than in the countries of the Eastern Caribbean Currency Union (4 percent), other small states (4½ percent), and low-income countries of Asia (7 percent). Average real income per capita in the Pacific island countries has increased by less than 10 percent since 1990, compared with 40 percent in the Eastern Caribbean, 25 percent in the group of all small states, and about 150 percent in emerging Asia. Growth in the Pacific island countries in the 2000s was the lowest in four decades. As of 2014, average gross national income per capita in these countries was just one-third that of the Caribbean countries. Among Pacific island countries recovery from the global financial crisis has also generally lagged that in Asian low-income and emerging market economies.

This book examines the factors that have contributed to the low rates of economic growth in the region and seeks to identify policies that could help enhance resilience and raise growth performance in a way that is both inclusive and sustainable. Most chapters are based on papers presented at three high-level regional conferences that were organized by the International Monetary Fund (IMF) and hosted by the governments of Fiji, Samoa, and Vanuatu between 2012 and 2015.2

The picture that emerges is that the Pacific island countries’ below-par growth performance can only partly be explained by the region’s unique physical characteristics, including their very small populations and internal markets, extreme geographic isolation, vulnerability to natural disasters and climate change, narrow production bases, and the depletion or unsustainable exploitation of natural resources. In addition to these physical characteristics, economic growth in the region has also been constrained by policy-related factors, such as weak macroeconomic policy frameworks and implementation capacity, lack of financial depth, laws and customs that limit the flexibility of product and factor markets, particularly the real estate market, and, in some cases, high levels of public debt, dependence on foreign aid, and history of political instability.

Chapters in this book are grouped into four sections, examining growth and resilience, spillovers and vulnerabilities, macroeconomic policy, and structural impediments to growth. The main message is that there is scope for the Pacific island countries to strengthen the policy environment and improve growth performance. However, to do so, governments in the region need to put in place policies that foster macroeconomic stability and debt sustainability, build institutions through reforms, strengthen confidence in the policy framework, promote the development of financial markets, and improve the business environment to attract foreign direct investment. Another challenge the authors identify is finding the right balance between the need to build fiscal buffers to enhance resilience and the need to fund development spending. Finally, the reader may be interested in the appendices, which provide economic profiles of each of the 12 countries covered in this book.

1The group of Pacific island nations examined in this book consists of Fiji, Kiribati, Marshall Islands, Micronesia, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu, and Vanuatu, all of which are members of the IMF. Timor-Leste is also included, because it shares similar prospects and challenges with these Pacific island countries.

2Participants in the conferences included finance ministers, central bank governors, and other policymakers from the region, as well as officials from international financial institutions and regional agencies (the Asian Development Bank, the IMF, the Pacific Forum Secretariat), representatives of major bilateral donors (Australia, China, the European Union, Japan, Korea, New Zealand), leading academics, and private sector representatives. For more information on the conferences, see http://www.imf.org/external/np/seminars/eng/2012/PIC; http://www.imf.org/external/np/seminars/eng/2013/PIC; and https://www.imf.org/external/np/seminars/eng/2015/fiji.
SETTING THE STAGE: THE QUEST FOR RESILIENCE AND GROWTH IN THE PACIFIC ISLANDS

In the first part of the book, contributors explore the factors that have adversely affected growth in the region, as well as economic vulnerabilities and how to build resilience to them. Chapter 2, by Ezequiel Cabezon, Patrizia Tumbarello, and Yiqun Wu, identifies characteristics that have been shown to impede growth in Pacific island countries, including small populations, geographical isolation, narrow export and production bases, the lack of economies of scale, limited access to both domestic and international capital markets, exposure to shocks (including natural disasters and climate change), a heavy reliance on foreign aid, high fixed costs of establishing public services, a limited range of economic policy instruments, and a high cost of doing business. The chapter points to the importance of building policy buffers to enhance resilience and of improving the composition of public spending, especially in education, to lift potential growth.

Small states are inherently more vulnerable economically than other groups of countries. Nevertheless, small states can succeed if they adopt policies conducive to good economic, social, and political governance. In Chapter 3, Lino Briguglio highlights the importance of setting policy directions and priorities that focus on strengthening the resilience of small states, presenting a framework for understanding the benefits of good political, economic, social, and environmental governance in countries with high vulnerability to external economic shocks.

In Chapter 4, Yongzheng Yang, Hong Chen, Shiu Raj Singh, and Baljeet Singh zero in on slow growth rates and tepid recovery in Pacific island countries following the global financial crisis, comparing them with other groups of countries with similar characteristics. The chapter sheds some light on slowing growth in the 2000s, and attempts to tease out the roles played by natural conditions and policy-related factors.

The Pacific island countries are among the most susceptible to natural disasters in the world. The combination of location and small size heightens their vulnerability to earthquakes and weather-related extremes such as cyclones, tsunamis, hurricanes, and floods. Furthermore, climate change poses risks to the very survival of some Pacific atoll islands. Natural disasters have a negative impact on both short-term and longer-term potential growth, as well as on public finances. In Chapter 5, Ezequiel Cabezon, Leni Hunter, Patrizia Tumbarello, Kazuaki Washimi, and Yiqun Wu present the first cross-country IMF study assessing fiscal indicators and the consequences of natural disaster damage and losses for growth in Pacific island countries as a group. The chapter offers policymakers a policy framework for boosting resilience to natural disasters. It also clarifies the role the IMF can play in helping Pacific island countries face the challenges posed by natural disasters in the design and formulation of their macroeconomic policy.

MANAGING EXTERNAL SPILLOVERS, SHOCKS, AND VULNERABILITIES

The four chapters in this section of the book elaborate on the vulnerability of Pacific island countries to external shocks, particularly commodity price shocks, and spillovers from within the region and globally. In Chapter 6, Fazurin Jamaludin, Niamh Sheridan, Patrizia Tumbarello, Yiqun Wu, and Tlek Zeinullayev show that the Pacific island countries have become more closely integrated with the economies of Australia, New Zealand, and emerging Asia over the past two decades, with a corresponding increase in inward spillovers from the region. China has become a major market for commodity exports, making spillovers from China increasingly important.

Chapter 7, by Patrick Colmer and Richard Wood, highlights the importance of natural resource endowments, economic integration, debt levels, and macroeconomic imbalances in explaining differences in growth performance. Although the onset of the global financial crisis in 2008 did not have a substantial direct impact, given their generally low levels of financial development, the Pacific
island countries did experience a significant adverse impact from the ensuing global recession, operating mainly through exports and remittances. The negative impact was greatest for the smallest, most fragile countries, particularly those with foreign trust funds.

In Chapter 8, Xuefei Bai, Patrizia Tumbarello, and Yiqun Wu study inflation in Pacific island countries since the early 2000s. Spillovers of international commodity (especially food) prices and exchange rates have been rapid and significant. However, owing to more prudent macroeconomic policies and more diversified import sources, these countries also appear to have become more resilient to external inflationary shocks.

Chris Becker, in Chapter 9, provides further evidence that the small populations and extreme geographic isolation of the Pacific island countries—both from major global markets and from each other—have had significantly adverse consequences for growth performance, and ranks Tuvalu, Kiribati, Marshall Islands, Micronesia, and Palau as the five most vulnerable countries in the world. The lack of arable land is a significant constraint in many of the countries.

TAILORING MACROECONOMIC POLICIES TO THE SMALL STATES OF THE PACIFIC

Five chapters are devoted to analyzing the importance of policy instruments to support growth. In Chapter 10, Ezequiel Cabezon, Patrizia Tumbarello, and Yiqun Wu explore how policies can best support economic growth given the extent of the natural impediments and limited policy options available to the national authorities. The unique characteristics of Pacific island countries make fiscal management more challenging than in most other countries, including other small states. Nevertheless, strengthening fiscal frameworks is the key to long-term growth. Given the large development needs that these countries face, a key challenge for policymakers is the trade-off between building fiscal buffers to foster resilience to shocks and funding additional investment spending. The chapter examines the opportunity cost of building such buffers.

Owing to small size and a lack of scale, the government sector plays a significant role in the economies of small states, particularly the remote and dispersed Pacific island countries. Sergei Dodzin and Xuefei Bai, in Chapter 11, present a practical framework that links fiscal aggregates, GDP, public and private sector employment, and other factors to analyze fiscal multipliers and the impact of fiscal policies on growth, with applications to Kiribati and Palau.

During the global financial crisis, central banks in some Pacific island countries eased monetary policy to stimulate growth. However, the monetary policy transmission mechanism was weak, according to the findings detailed in Chapter 12 by Yongzheng Yang, Matt Davies, Shengzu Wang, Jonathan Dunn, and Yiqun Wu. The chapter highlights the importance of developing domestic financial markets, and stresses the need to coordinate macroeconomic policies and to use all macroeconomic tools available in designing countercyclical policies, including exchange rate flexibility.

Vulnerability to commodity price shocks poses challenges to monetary policy in Pacific island countries. The high degree of exchange rate pass-through to headline inflation and weak monetary transmission mechanisms suggest exchange rate changes are more effective than monetary policy in managing inflation. To assess the trade-off between the use of the exchange rate and monetary policy in macroeconomic stabilization, Shanaka Peiris and Ding Ding use a model-based approach to examine the optimal policy in response to the historical distribution of exogenous shocks in a Pacific island country. The empirical evidence and model simulations they describe in Chapter 13 favor employing exchange rate policy given the close relationship between exchange rate changes and headline inflation and low interest rate sensitivity of aggregate demand.

In Chapter 14, Jan Gottschalk revisits the issues of excess liquidity and interest rate pass-through in the Pacific and argues that the effectiveness of monetary transmission in the Pacific is inhibited by the absence of a number of channels that are available to central banks in advanced economies. Monetary transmission is therefore dependent on interest rate pass-through, which has been ineffective.
in the Pacific. Although very little can be done to improve the functioning of the interest rate channel in the short term, policy options are available over the longer term to improve the functioning of the banking sector, in terms of both enhanced competition and market infrastructure.

**REMOVING STRUCTURAL IMPEDIMENTS TO GROWTH**

The final section of the book looks at the structural impediments to growth, including public financial management, trade, and banking sector characteristics, taking a look back at the roles played by these obstacles to growth, and then forward to strategies that, if implemented, could help lift Pacific island countries to greater prosperity. Chapter 15, by Tobias Haque, Richard Bontjer, Mary Betley, and Ron Hackett, argues that the economic vulnerability of the Pacific island countries is exacerbated by weaknesses in their public financial management systems. In view of the severe shortage of expertise and implementation capacity in many countries in the region, reform should be carefully prioritized to address the most serious and binding constraints affecting each individual country, instead of attempting to implement all facets of "international best practice" standards in a comprehensive single stage. Efforts should focus initially on improving functions that are likely to have the greatest impact on the countries’ development priorities and objectives, such as building the revenue base, achieving a better alignment between government spending programs and social and economic objectives, and ensuring greater resilience to economic volatility and natural disasters.

International trade is vital for economic prosperity in Pacific island countries, but their trade performance has been generally weak over the past decade, with the exception of resource-rich countries. In Chapter 16, Hong Chen, Lanieta Rauqeuqe, Shiu Raj Singh, Yiqun Wu, and Yongzheng Yang note that the Pacific island countries have much scope to diversify trade into Asian markets. The authors argue that the emergence of Asia as a dynamic global economic region presents the Pacific island countries with an unprecedented opportunity to develop trade, particularly in tourism. Moreover, if stronger synergies can be established between tourism, agriculture, and fisheries, countries stand a better chance to improve broad-based growth.

In Chapter 17, Nooman Rebei investigates the determinants and implications of high spreads between bank deposit and lending interest rates. Such high spreads may be an indication of low competition in the banking industry, which can hinder access to credit by the private sector and impede growth, as well as reduce the effectiveness of the credit channel for the transmission of monetary policy, both of which are identified in earlier chapters as impediments to growth. Rebei uses an innovative set of macroeconomic and bank-specific data for the Solomon Islands to develop his theory. He concludes that some scope exists for increasing competition in the Solomon Islands’ banking sector, but financial deepening also requires the development of nonbank institutions.

In Chapter 18, Matt Davies, John Vaught, and Ezequiel Cabezon provide comparative information on interest rate levels, key profitability indicators, and capital adequacy across the Pacific island countries and vis-à-vis other selected regions, to better contextualize regulatory actions and reforms that are needed to increase the depth, breadth, and efficiency of the financial sector in the Pacific. Although the focus of efforts must necessarily be at the national level, coordinated regional action also has a role to play, particularly given similarities in the underlying regulatory systems.
Acknowledgments

This book is the product of a strong partnership among Pacific island policymakers, development partners, academics, experts, and IMF staff. Most of the papers contained in this volume have been presented at the IMF high-level regional conferences in Samoa, Vanuatu, and Fiji, in 2012, 2013, and 2015 and greatly benefited from the discussion with the Pacific small states’ authorities and other stakeholders.

This book would not have been possible without the support and encouragement of IMF Deputy Managing Director Min Zhu and of Changyong Rhee, Director of the Asia and Pacific Department. Special thanks go to our colleagues for their help in ensuring the successful completion of this book. We would like to thank in particular Sergei Dodzin for leading the production of the country annexes in strong collaboration with country teams. We are very grateful to Dongyeol Lee, Kazuaki Washimi, and Yiqun Wu who made the production of this book possible and to Ezequiel Cabezon and Tlek Zeinullayev for updating all the charts and tables. Gabriel Alvim, Justin Flinner, and Kathie Jamasali provided excellent administrative assistance. Fazurin Jamaludin coordinated all stages of production.

We are in debt to Joanne Creary from the IMF’s Communications Department who edited the manuscript and together with Patricia Loo provided exceptional collaboration in coordinating the publication of this book.
Xuefei Bai, a national of China, is a section chief in the International Department of the People's Bank of China, and works on regional financial cooperation issues. He also served for one year in the Asia and Pacific Department of the IMF as a special appointee economist, working on Kiribati and Tuvalu.

Chris Becker, a national of Australia and Germany, works at the Reserve Bank of Australia (RBA) as the head of domestic liquidity management, and also consults to the IMF providing advice and technical assistance on monetary and foreign exchange market policies and operations. He has held a variety of managerial positions at the RBA in departments covering economic analysis, domestic and international financial markets, as well as financial stability. He worked at the IMF Board from 2010 to 2012, where he represented members including Australia, Korea, New Zealand, and several Pacific island countries.

Mary Betley, a British national, works as a consultant providing advice and technical assistance in the areas of public financial management, public expenditure management, and budgetary policy and planning. She has experience assisting governments with budget and public financial management reforms in numerous countries in east Asia and the Pacific, central and south Asia, Africa, and eastern Europe. She has also participated in a number of IMF Fiscal Affairs Department missions.

Richard Bontjer, a national of Australia, is Director of Public Financial Management Advice in the Pacific Division of the Australian Department of Foreign Affairs and Trade (DFAT). Prior to joining DFAT, Mr. Bontjer served as an advisor for the Fiscal Affairs Department of the IMF, focusing on countries affected by conflict, and as a fiscal specialist consultant to the World Bank and the Panel of Experts for the Organisation for Economic Co-operation and Development Partnership for Democratic Governance (PDG). He has also held a variety of positions in the Australian Department of Finance.

Lino Briguglio, a national of Malta, is the Director of the Islands and Small States Institute of the University of Malta and a Professor of Economics at the same university. He is known internationally for his seminal work on the “Vulnerability Index,” which measures the extent to which countries are exposed to external economic shocks. He has also pioneered work on the measurement of economic resilience. He has acted as consultant to various international organizations on studies and reports relating to small states.

Ezequiel Cabezon, a national of Argentina, is an economist in the IMF’s European Department, and the desk economist for Albania. Before this, he was in the Asia and Pacific Department of the IMF, where he worked on the Pacific island countries, and he has also worked at the Inter-American Development Bank, focusing on the South American region.

Hong Chen, a national of China, is a senior researcher at the China Institute of Economic Transformation and Opening, Lingnan (University) College, Sun Yat-Sen University, China. She has been a consultant for the United Nations Economic and Social Commission for Asia and the Pacific and the United Nations Population Fund, working on projects related to trade and development.
Patrick Colmer, a national of Australia, works as a consultant providing advice and technical assistance in the subject areas of foreign investment, indirect tax, government relations, and development. His clients include governments in the Asia-Pacific region. He was previously the general manager of the International Finance and Development Division of the Australian Treasury. He has 25 years’ experience as a senior policy advisor with various Australian government agencies.

Matt Davies, a division chief in the IMF’s Fiscal Affairs Department. He has worked extensively in Asia and the Pacific, including as coordinator of the IMF’s Pacific Financial Technical Assistance Centre based in Fiji. Prior to joining the IMF he worked in the United Kingdom and Papua New Guinea governments.

Ding Ding, a Chinese national, is a senior economist in the IMF’s Asia and Pacific Department. He is currently the desk economist on Korea and mission chief for Kiribati. He has worked on a number of advanced and emerging market economies, including Australia, New Zealand, and Sri Lanka, and has published on a variety of topics such as macro-financial linkages, monetary policy transmission, and macroeconomic modeling and forecasting. He holds a PhD in Economics from Cornell University.

Sergei Dodzin, a senior economist in the Asia and Pacific Department (APD). He led missions to Kiribati and worked on various IMF country teams, including Malaysia, Singapore, Myanmar, Fiji, and, prior to joining APD, Serbia during the global financial crisis. As a member of the APD Small States Unit he was extensively involved in the analytical and policy work on small states. He also worked on an external assignment at the U.K. Financial Services Authority in 2007–08, where he participated in supervisory assessment of complex financial institutions and research and supervisory projects. His research interests include international economics, finance, and macro-financial linkages. Mr. Dodzin holds a PhD in Economics from Harvard University.

Jonathan Dunn is currently the IMF’s resident representative to Vietnam and Lao P.D.R. He has been a deputy division chief at the IMF and the IMF mission chief for Fiji, Maldives, and Tajikistan. During 2009–11 he coordinated work on the Pacific islands in the IMF’s Asia and Pacific Department. He has also been the IMF’s resident representative in Azerbaijan, Bangladesh, Georgia, and Nigeria.

Jan Gottschalk, a national of Germany, is a senior economist in the IMF’s Fiscal Affairs Department. He was previously the macroeconomic advisor at the IMF’s Thailand Technical Assistance Office and prior to that the macroeconomic advisor at the IMF Pacific Financial Technical Assistance Centre (PFTAC) during 2010 to 2013. At PFTAC he helped build capacity for macroeconomic analysis and forecasting at ministries of finance and central banks in the Pacific. Before joining the IMF in 2001, he worked on business cycle research and forecasting in Germany.

Ron Hackett is Public Financial Management Advisor in the IMF Pacific Financial Technical Assistance Centre. Prior to joining the IMF in 2011, he served for 15 years as a project manager and hands-on advisor for several fiscal reform projects in developing countries funded by the U.S. Agency for International Development. His international development work was preceded by 20 years of budget management experience related to financing education, public employee pensions, and human services in the Minnesota State Budget Office.

Tobias Haque, a New Zealand national, is an economist at the World Bank, working on public financial management, economic policy, and debt management issues. Based in Washington, he previously spent three years based in the IMF Pacific Financial Technical Assistance Centre office in Suva, Fiji, and earlier lived in Honiara while working as the World Bank country economist for the Solomon Islands. He has published several research papers and policy reports promoting context-appropriate approaches to public financial management and economic management in Pacific island countries.
Leni Hunter, a New Zealand national, joined the Asia and Pacific Department of the IMF in 2013, working primarily on Pacific island countries and Timor-Leste. During 2011–13 she served on the IMF’s Executive Board as the senior advisor from New Zealand. Prior to joining the IMF she spent 11 years at the Reserve Bank of New Zealand in various roles. She holds a Master of Commerce Degree in Economics from the University of Auckland.

Fazurin Jamaludin, a Malaysian national, is an economist in the Small States Unit of the IMF’s Asia and Pacific Department. His country work experience at the IMF includes the Central African Republic, Maldives, the Solomon Islands, and Timor-Leste. Prior to joining the IMF, he worked on capital market development and regulatory issues in emerging markets and developing economies.

Hoe Ee Khor is the Chief Economist of the ASEAN+3 Macroeconomic Research Office (AMRO) and former deputy director of the IMF’s Asia and Pacific Department. He started his career as an economist at the IMF in 1981 and has worked on a wide range of economies from the Caribbean and Pacific islands to southeast Asia, Korea, and Mexico. He was the IMF resident representative in China during 1991–93, and has written papers and reports on a wide range of topics and countries, focusing primarily on macroeconomic, monetary, and financial issues. He worked at the Monetary Authority of Singapore during 1996–2009 and was assistant managing director (Economics) responsible for monetary policy, financial stability, and international relations. He was also chief economist at the Abu Dhabi Council for Economic Development during 2009–12.

Roger P. Kronenberg is a macroeconomic and financial policy consultant. He retired from a 29-year career with the IMF in 2010. As an advisor in the IMF’s Asia and Pacific Department, Mr. Kronenberg coordinated work on the Pacific island countries, and headed IMF mission teams for a diverse group of countries, including Australia, Brunei Darussalam, Fiji, Malaysia, Mongolia, New Zealand, Papua New Guinea, and Samoa.

Shanaka J. Peiris is the IMF’s resident representative to the Philippines and covers ASEAN macro-financial surveillance for the Asia and Pacific Department. Prior to this he was a senior economist in the Asia and Pacific and Monetary and Capital Markets Departments of the IMF covering ASEAN countries and south Asia. He was also a mission chief to Pacific island countries and led a subworking group on asset price risks for the G-20 Mutual Assessment Program. He has published papers in academic journals on a wide range of topics, including inclusive growth, monetary policy and inflation, bond markets, banking and finance, and macroeconomic models for emerging markets, and has coauthored a book on poststabilization economics in sub-Saharan Africa.

Lanieta Rauqueuqe, a national of Fiji, is currently a senior economist at the Reserve Bank of Fiji, and previously worked as a local economist at the IMF’s Resident Representative Office for the Pacific Islands, based in Suva, Fiji.

Nooman Rebei is a senior economist in the IMF’s Middle East and Central Asia Department. He has a PhD in Economics from the University of Quebec at Montreal, specializing in macroeconomics and monetary and fiscal policies. Before joining the IMF, he was a principal economist in the central banks of Canada and Spain. He also worked at the African Development Bank as a research economist.

Niamh Sheridan, a national of Ireland, is a senior economist in the IMF’s Asia and Pacific Department, the mission chief for Samoa, and desk economist for Malaysia. Before this, she worked on Fiji, Australia, and Singapore. She has also worked in the IMF’s Institute for Capacity Development, training government officials on a broad range of macroeconomic topics.
Baljeet Singh, a national of Fiji, is a lecturer at the University of the South Pacific, Fiji. Before this, he was an economic planning officer at the Ministry of National Planning, Fiji. His research focuses on development issues in the Oceania region.

Shiu Raj Singh, a national of Fiji, is a Senior Public Finance Management Officer in the Asian Development Bank’s Pacific Department, and the country economist and country officer for Samoa. Before this, he worked in the IMF’s Asia and Pacific Department as a desk economist for Samoa and Tuvalu. He has also worked as an economist for the Government of Fiji.

Patrizia Tambarello is the unit chief of the Small States Unit of the Asia and Pacific Department of the IMF. She oversees the work on the small states of the Pacific, and she is currently also the mission chief for the Solomon Islands. She has also worked on Australia, Vietnam, Albania, Moldova, Algeria, and Morocco. Prior to working in the Asia and Pacific Department, she spent time in the IMF’s Strategy, Policy, and Review and Middle East and Central Asia Departments, focusing on emerging markets and economies in transition. Her research interests and publications have focused on enhancing macroeconomic resilience to natural disasters and climate change, fiscal frameworks, trade, and corporate and bank vulnerabilities.

Jon Vaught was formerly the Financial Sector Supervision Advisor at the IMF Pacific Financial Technical Assistance Centre (PFTAC). Prior to joining PFTAC, he provided technical assistance to a number of countries under the IMF technical assistance program, including Swaziland, where he was resident advisor for three years.

Shengzu Wang is currently the China Economist at Barclays Capital Asia, based in Hong Kong SAR. He was previously an economist in the European Department of the IMF covering the euro area and Greece. Since joining the IMF in 2009, he has also worked on economic surveillance and lending programs on a variety of advanced and emerging market economies in Asia-Pacific and Africa. Dr. Wang received his PhD in Economics from McGill University. He also served as an assistant professor at Fudan University, China.

Kazuaki Washimi, a national of Japan, is an economist in the IMF’s Asia and Pacific Department, and the desk economist for Papua New Guinea, Samoa, and Timor-Leste. Prior to joining the IMF, he worked as an economist in the Research and Statistics Department of the Bank of Japan.

Richard Wood was formerly a policy advisor at the Australian Treasury, and represented Australia at the Organisation for Economic Co-operation and Development and the Paris Club.

Yiqun Wu, a Chinese national, is an economist in the IMF Asia and Pacific Department (APD), and the desk economist for the Solomon Islands. His country experience at the IMF includes Kiribati, Palau, and Papua New Guinea. He has also worked in APD’s Regional Studies Division and coauthored several analytical chapters in the Regional Economic Outlook: Asia and Pacific.

Yongzheng Yang is currently a deputy division chief in the Asia and Pacific Department of the IMF and the IMF’s mission chief for Myanmar. Prior to this, he was the IMF’s resident representative in Pacific island countries from 2010 to 2014 and served as the mission chief for Papua New Guinea and Samoa. Mr. Yang has also worked on countries in Africa and Central Asia, as well as on IMF policies toward low-income countries. Before joining the IMF in 2001, he was a senior lecturer at The Australian National University, where he taught for 10 years. His most recent research focuses
on economic growth, exchange rate policy, and monetary policy transmission mechanisms in Pacific island countries and the role of emerging donors in the economic development of low-income countries.

**Tlek Zeinullayev**, a national of Kazakhstan, is a research analyst in the Small States Unit of the IMF’s Asia and Pacific Department. Prior to joining the IMF, he worked as a consultant at the World Bank in the Europe and Central Asia Chief Economist Office. He holds an MPhil in Economics from Oxford University.
PART I

Setting the Stage: The Quest for Resilience and Growth in the Pacific Islands
Economic Growth in the Pacific Island Countries—Challenges, Constraints, and Policy Responses

ROGER P. KRONENBERG AND HOE EE KHOR

Economic growth among the Pacific island countries (PICs) has lagged most peer groups for more than a decade. This chapter provides an overview of the policy issues and challenges faced by these countries, and discusses the factors that have contributed to the low rates of economic growth in the region. It seeks to identify policies that could help raise growth performance in a way that is both inclusive and sustainable. The countries examined are Fiji, Kiribati, the Marshall Islands, Micronesia, Palau, Papua New Guinea, Samoa, the Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu. All are IMF members.

The picture that emerges is that the below-par growth performance of PICs can be partly explained by the region’s unique characteristics. But policies also matter.

THE ECONOMIC SETTING

PICs seem stuck on a low-growth path (see Chapter 6). During the 10 years preceding the global financial crisis, real GDP growth in these countries averaged just 2 percent a year, considerably lower than in the countries of the Eastern Caribbean Currency Union (4 percent), other small states (4½ percent), and Asia’s low-income countries (7 percent) (Figure 1.1). Real average income per capita in PICs has increased by less than 10 percent since 1990, compared with 40 percent in the Eastern Caribbean, 25 percent in the group of all small states, and about 150 percent in Asia’s emerging market economies. PIC growth in the 2000s was the lowest in four decades. As of 2013 average gross national income per capita in PICs was just one-third that of the Caribbean countries. The PICs’ recovery from the global financial crisis has also lagged Asia’s low-income countries and emerging market economies. Meanwhile, differences in growth performance among PICs have widened over the past decade, with the natural-resource-rich countries (Papua New Guinea, the Solomon Islands, Timor-Leste) generally outperforming the others, particularly since 2008 (Figure 1.2).

The below-par growth performance can be partly explained by the region’s unusual geographic, demographic, climatic, and other characteristics. These include:

- Small populations and small internal markets that result in diseconomies of scale and high fixed costs of production.
- Extreme geographic dispersion and isolation, implying low connectivity.
- Vulnerability to natural disasters and climate change, including cyclones, droughts, and rising sea levels.
- Narrow production and exports bases due to smallness and therefore lack of economies of scale.
- Depletion or unsustainable exploitation of natural resources, including forestry products, minerals, energy resources, and marine resources.
Figure 1.1 Growth Performance: Pacific Island Countries and Selected Comparators (Percent)

Source: IMF, World Economic Outlook database.

Note: LICs = low-income countries; PICs = Pacific island countries.

Figure 1.2 Growth Performance among Pacific Island Countries (Percent)

Source: IMF, World Economic Outlook database.

Note: LICs = low-income countries; PICs = Pacific island countries.
In addition to the effects of these physical characteristics, growth in some PICs has been further constrained by policy-related factors, such as:

- Weak macroeconomic policy frameworks, which led at times to unsustainable exploitation of natural resources.
- Capacity constraints, including weak policy implementation capacity.
- Limited financial depth.
- Laws and customs that limit the flexibility of product and factor markets (for example, land tenure).
- High levels of public debt (Samoa, Tonga, Tuvalu).
- High dependence on foreign aid; for example, microstates reliant on Compacts of Free Association with the United States (Marshall Islands, Micronesia, Palau); and remittances (Samoa, Tonga, Tuvalu).
- Political economy factors such as periods of political instability or lack of security (including, at various times, Fiji, Papua New Guinea, the Solomon Islands, Timor-Leste, and Tonga), which hamper investment and the development of sound institutions.

While there is broad agreement about the factors that have contributed to slow growth in PICs, it is less obvious how policymakers can overcome these constraints. Small domestic markets, remote locations, and poor natural resource endowments do not lend themselves to quick or easy solutions. Even so, policies do affect economic outcomes in broadly predictable ways, and even the smallest countries can achieve higher economic performance with the right policy mix, good governance, and a skilled labor force.

There is scope for PICs to strengthen the policy environment and improve growth performance. However, to do so, their governments need to put in place policies that foster macroeconomic stability and debt sustainability, build institutions through reforms, strengthen confidence in the policy framework, promote the development of financial markets, improve the business environment, and address rigidities in product and factor markets to attract foreign direct investment. Another challenge is to find the right balance between the need to build fiscal buffers to enhance resilience and the need to fund development spending.

The foundation of a growth-enhancing policy strategy must start with a credible macro-fiscal framework that sets clear, achievable targets for a sustainable medium-term debt position. Here, one of the biggest challenges is striking the right balance between policy rules that can help anchor confidence and policy flexibility to enable the authorities to respond to unanticipated macro-critical shocks, including natural disasters, which can be severe in PICs. For countries with significant natural resource endowments, such as Papua New Guinea, the Solomon Islands, and Timor-Leste, the fiscal framework and minerals taxation regime should facilitate the transformation of nonrenewable underground and undersea wealth into income-generating wealth through investments in domestic infrastructure, human capital, and a diversified, low-risk portfolio of foreign financial assets.

The challenges of doing so should not be underestimated, particularly in countries where technical capacity and the ability of the economy to absorb higher levels of development spending may be very limited. Development programs therefore need to be scaled up in line with capacity improvement to ensure effective use of resources. Governments and central banks also need to hold adequate international reserves for precautionary purposes. Although it is an important form of protection, self-insurance in itself is not enough and needs to be complemented by international safety nets and pooling of risks through regional arrangements (see Chapter 5). Other key policy elements include:

- Monetary and exchange rate arrangements that facilitate the maintenance of low inflation, ensure competitiveness, and promote adjustment to large terms-of-trade swings or supply shocks in a manner consistent with a country’s institutional and administrative capacity.
• Developing sound financial institutions capable of mobilizing savings and channeling them to productive investments.
• Policies to address structural rigidities in land tenure systems. These rigidities reduce the efficiency of land use by placing constraints on the ability to transfer ownership of land, using land for loan collateral, and putting land to nontraditional uses.
• Regional arrangements to mitigate the diseconomies of scale, enhance competition, protect and promote regional interests, and allow greater specialization in areas of comparative advantage.
• Closer trade and investment linkages with fast-growing partners, including Australia, New Zealand, and East Asia’s rapidly growing economies.

CHALLENGES AND CONSTRAINTS TO GROWTH
Small Populations and Remote Locations

With the exception of Papua New Guinea (population: 7.2 million), the PICs and Timor-Leste are small states.1 Of these, seven (Kiribati, Marshall Islands, Micronesia, Palau, Samoa, Tonga, Tuvalu) can be classified as microstates, with populations under 200,000.

Small populations limit market size and can affect growth and income levels through their impact on competition, the diversity of labor market skills, diversification of production, and the ability to achieve economies of scale in producing public services ranging from health care to financial supervision and tax administration. Most PICs also have very small land areas, although the maritime areas within their exclusive economic zones (EEZs) can be very large (Figure 1.3).

PICs are also among the most remote countries in the world. Distances to even their closest neighbors—Australia, New Zealand, and countries in East Asia—are measured in hundreds, if not thousands, of kilometers. While advances in telecommunications technology have reduced some of the costs of remoteness, PICs have, on the whole, been slow in introducing and adding capacity in new technologies. Indeed, it could even be argued that technological advances have left PICs even more commercially isolated from the major centers of global economic activity than before, since there is now less need for modern aircraft and ships to call at PICs for refueling or resupply.

Trade among PICs is also constrained by geography. In the same way that they are far from large markets, the distances separating PICs from each other are also considerable, and there are few complementarities in their production structures to encourage trade among them. Even domestic commerce can be constrained by remoteness. Micronesia, for example, comprises 65 inhabited islands in four separately governed states. Kiribati’s 21 inhabited islands have a total area of just 811 square kilometers in an EEZ covering some 3.4 million square kilometers of ocean, and two of the country’s three island chains have no air services. Even in Papua New Guinea, the most populous PIC and the one with the largest land area, transportation between different parts of the country can be extremely difficult because of the rugged terrain and limited road infrastructure.

Vulnerability to Natural Disasters and Climate Change

Climate, geography, geology, and weak infrastructure leave PICs exposed and vulnerable to natural disasters. Natural disasters have included major cyclones (Fiji, Samoa, Tonga, Vanuatu), tsunamis (Samoa, the Solomon Islands), severe drought (Marshall Islands, Tuvalu), flooding (the Solomon Islands), and volcanic eruption (Papua New Guinea). And then there is the looming existential threat to some low-lying coral island countries (Kiribati, Marshall Islands, Tuvalu) posed by rising sea levels from climate change. Faced with this bleak prospect, the government of Kiribati has

---

1Small developing countries/small states have populations of under 1.5 million. See IMF (2014).
bought land in Fiji and asked Australia and New Zealand to open their borders to immigrants from Kiribati in anticipation of a possible evacuation of the islands.

**Natural Resources and Tourism**

The natural resource endowments of PICs span a huge range. In Timor-Leste, for example, oil and natural gas account for about 80 percent of GDP and 90 percent of government revenue, making the economy highly dependent on energy prices and the exploration of new fields. The country needs to successfully diversify its currently narrow economic base. Natural resources, including gas, oil, copper, and gold, also play a very important role in Papua New Guinea’s economy. A large-scale liquefied natural gas development was successfully completed in 2014 and production is expected to continue for about 20 years. Gold was once an important export for Fiji and the Solomon Islands, with the latter also having untapped reserves of nickel and bauxite. In contrast, some other PICs, including some of the smallest, have no commercially exploitable mineral wealth, relatively little arable land, and precarious supplies of fresh water.

The sustainable management of natural resource wealth can present huge policy challenges for low-income countries. Unlike most other forms of economic activity, the extraction of energy and mineral resources can occur only once. For sustainable and inclusive growth to take place after the exhaustion of mineral wealth, these countries must set aside a portion of mining sector income for investment in income-generating assets for the future. Good examples include Kiribati, which has built up a significant sovereign wealth fund from its phosphate deposits, and Timor-Leste, which has also built up a sizable sovereign wealth fund from its energy exports since 2005.

Several PICs have important forestry and agricultural sectors, but the resource base in some of them has been depleted by unsustainable rates of harvesting. Forestry remains an important export sector for the Solomon Islands, for example, though the country faces unsustainable rates of logging that will lead to rapid depletion of logging stocks. Sugar production in Fiji has been declining for...
many years because of the phasing out of trade preferences in Europe, low crop yields, the inefficiency of its manufacturing plant, and the emigration of growers. Recent restructuring efforts have partially reversed this trend. Samoa, Tonga, and Vanuatu are producers of agricultural commodities, including root crops, copra, and coconut oil. The small atoll islands of Micronesia have very little in the way of onshore natural resources, including arable land.

The Pacific islands occupy some of the world’s richest fishing waters, but managing these resources has been a major challenge. The EEZs claimed by the eight parties to the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest cover some 14.3 million square kilometers—roughly 1½ times the size of China or the United States—and account for 25–30 percent of the world’s tuna supply (Figure 1.4).² Foreign vessels operating under licensing arrangements account for more than 80 percent of the total catch in the EEZs of PICs, and monitoring their activities across such large swathes of ocean presents major logistical challenges for these countries.

The natural beauty and rich cultural heritage of the Pacific islands are enormous assets for the tourism industry. In the tourism-based economies (Fiji, Palau, Samoa, Vanuatu), tourism receipts on average account for about 30 percent of GDP—in Palau the share is 58 percent—compared to 19 percent in the Caribbean small states (Figure 1.5). In the other Pacific countries, tourism is still in relatively early stages of development, but the potential is large for niche activities such as diving and ecotourism.

Despite having these critical components, developing a sustainable tourism industry poses significant challenges for policymakers in the region. In infrastructure this requires sufficient guest accommodations, airports able to handle long-haul aircraft, and airlines interested in providing a

---

²The parties to the agreement are Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, the Solomon Islands, and Tuvalu.
The large, up-front costs of building this infrastructure can create considerable sequencing problems for small, remote countries, as there is a natural desire on the part of investors to want other infrastructure components in place before committing their resources. While it is clearly in the interest of policymakers to try to coordinate policies and investment decisions, the difficulty of the task is substantial—and the history of tourism development in the Pacific has numerous examples of very costly failures. Fragile environmental conditions and free-ridership issues add to the challenges and complexity of developing tourism in the region.

**Political and Social Stability**

Political and social stability are important catalysts for investment, sustainable economic growth, and inclusive development. Yang and others (Chapter 4) find that political stability has had an overall positive impact on the growth performance of the PIC region compared with other small states, but individual country experiences have differed sharply. Broadly speaking, the smaller Polynesian and Micronesian countries have experienced greater political stability than the larger Melanesian countries, which also happen to be the ones with greater endowments of natural resource wealth.

Recent political developments in the region have been quite encouraging. Timor-Leste, which experienced severe civil strife in recent decades, has successfully held democratic elections and is making significant progress in rebuilding national institutions and strengthening governance. With domestic security restored, the government was able to complete the withdrawal of the United Nations-sponsored multinational police force in 2012. Similarly, the regional police force requested by the Solomon Islands to help restore order following a period of social unrest has started to gradually wind down as the situation is normalized. Fiji, which had been ruled by a military junta since 2006, adopted a new constitution in 2013 and held a general election in September 2014. The successful transition to a democratic government has generated tremendous interest among foreign investors and is likely to lead to higher foreign investment.
POLICY RESPONSES TO STRENGTHEN GROWTH POTENTIAL

PICs have been significantly disadvantaged by their small populations, remote locations, weak administrative capacities, and limited arsenal of policy instruments. But what can the authorities do to secure a more prosperous and stable future? The chapters in this book suggest there is scope for policies to reduce the vulnerabilities of PICs and strengthen growth potential. Success will depend, to a large extent, on the ability of the authorities to put in place medium-term macro-fiscal frameworks, sound monetary and exchange rate policies, and structural reforms to improve the business environment, investment climate, and flexibility of markets. And to do this while finding new ways to turn the region’s unique resources and environment to its own greater advantage.

Macro-Fiscal Frameworks and Sovereign Wealth Funds

Fiscal policy serves multiple purposes in PICs. It must be designed to meet countries’ highest priorities for infrastructure, human capital formation, and the provision of public services, which is made more costly and difficult by their small size, remote location, and limited scope for high levels of labor force specialization. Fiscal policy must also be sustainable, which is particularly important and difficult in countries that are heavily dependent on exhaustible natural resources. The tax system should be as neutral and nondistortionary as possible, while also being administratively enforceable and not imposing excessive compliance costs. And the fiscal regime must establish the right balance between fiscal anchors, which generate confidence and predictability in the economic environment for domestic residents and foreign investors, and providing the authorities with adequate discretion to respond flexibly to unanticipated shocks or new opportunities.

Given the vulnerability to large shocks and revenue volatility, fiscal policy in the PICs should be grounded in a credible medium-term macro-fiscal framework (see Chapter 10). Fiscal frameworks for resource-rich PICs like Timor-Leste and Papua New Guinea recognize the importance of investing a significant share of their natural resource revenue in productive assets that can continue to generate a stream of income indefinitely after mineral or energy resources have been depleted. However, only five of the PICs have adopted a multiyear budget framework to help smooth the expenditure path over the medium term.

The appropriate policy response to a negative shock depends in part on the individual country’s fiscal space (see Chapter 6). While Papua New Guinea, the Solomon Islands, and Vanuatu still have fiscal space, the scope for countercyclical policies is more limited in those countries with high public debt (Marshall Islands, Samoa, Tonga, Tuvalu).

A critical issue for policymakers in resource-rich, low-income countries is how resource revenues should be used to promote sustainable growth. Traditionally, the emphasis was on setting aside a significant proportion of extractive resource revenues for the international reserves of the central bank. The revenues were typically invested in highly rated liquid financial assets, such as the government securities of reserve currency countries, which could generate steady, safe, and predictable streams of income, while providing a precautionary buffer to negative shocks.

In recent years, with yields on such instruments becoming very low and often negative in real terms, greater attention has turned to sovereign wealth funds and the need to maintain a broader, more balanced portfolio of international assets, including equities and other alternative assets, with the objective of improving investment returns while containing overall risk. The sovereign wealth funds of Kiribati and Timor-Leste, for example, are mandated to invest in diversified portfolios of bonds and equities. To assist the Timorese authorities in achieving these objectives, the government has retained the services of major international investment advisors to manage the portfolio of its fund, subject to the government’s prudent and transparent investment guidelines.

Thinking has also evolved somewhat on domestic investments. In particular, increased attention has been given to the need for low-income, resource-rich countries to invest in domestic infrastructure
and human capital to facilitate the diversification of their economies away from minerals or energy extraction. This is so that growth can become more broadly based and sustainable, as natural resource extraction peaks and eventually declines (IMF 2012). At the same time, it is important to recognize that PICs have quite limited absorptive capacity and that pushing too hard to scale up domestic investment can be inflationary and even wasteful, and have adverse consequences for competitiveness.

The economic policy frameworks of Marshall Islands, Micronesia, and Palau are structured around their Compacts of Free Association with the United States. These provide for the disbursement of sector grants by the United States and the establishment of trust funds that have been funded mostly by the United States. The purpose of the trust funds is to contribute to economic advancement and to achieve budgetary self-reliance ahead of the projected expiration in 2023–24 of U.S. grants to these countries. The trust funds are invested in a mix of assets (bonds and equities) and are subject to the oversight of joint committees with U.S. participation. For Marshall Islands and Micronesia, no disbursements from the funds are allowed until 2023. For Palau, the government was allowed to withdraw up to US$5 million annually until 2013, and it can gradually increase maximum annual withdrawals up to US$13 million in 2023 under the proposed new agreement. These three countries have adopted the U.S. dollar as their national currencies, reflecting the importance of the compacts in their policy frameworks as well as their small size. Tuvalu also participates in a large trust fund, which is jointly owned by the Tuvaluan government and several key development partners. The fund can be drawn down only when its value exceeds a benchmark that is indexed to Australia’s consumer price index, and the maximum that can be drawn is the portfolio value in excess of the benchmark.

**Monetary and Exchange Rate Arrangements**

Monetary policy can help maintain macroeconomic stability and smooth business cycles. However, its effectiveness depends, in part, on the strength of the pass-through of interest rates set by the central bank to bank deposit and lending rates. Gottschalk (Chapter 14) finds that this pass-through is weak in most PICs, which have large amounts of excess liquidity. In addition, the up-front fixed costs of establishing effective monetary policy institutions, instruments, and capacity can be extremely large for very small countries. Therefore, it is not surprising that the smallest PICs have adopted other reserve currencies, either the U.S. dollar or the Australian dollar, as their legal tender.³ Timor-Leste, which is a larger country, also uses the U.S. dollar, partly reflecting the importance of oil and natural gas exports (which are denominated in U.S. dollars) to its economy and its relatively underdeveloped financial markets. However, unlike the other smaller countries using the currencies of larger nations, Timor-Leste has established a central bank, both to supervise local financial institutions and to build research and other central banking capabilities.

Exchange rate flexibility can enhance the effectiveness of monetary policy and facilitate adjustment to economic shocks, particularly in countries subject to large terms-of-trade shifts and other external shocks. However, floating exchange rate regimes require foreign exchange markets that are sufficiently deep and liquid to prevent excessive volatility. Reflecting the small size of their foreign exchange markets, most of the PICs that have their own currencies maintain exchange rates pegged to a basket of foreign currencies (Fiji, Samoa, the Solomon Islands, Tonga, Vanuatu). Papua New Guinea, the country with the largest economy and banking sector in the region and a resource-based economy, is the only PIC with a flexible exchange rate regime.

**Regional Initiatives**

The exceptionally small size of PICs means that regional initiatives have the potential of generating economies of scale that could not possibly be achieved by individual countries. Regional initiatives

---

³ Kiribati and Tuvalu use the Australian dollar, given Australia’s importance as a trading partner.
also have an important role to play in cases where the actions of one country have externalities—positive or negative—for their neighbors, and in cases where multiple countries may be prone to the same shocks, such as cyclones.

There are success stories of regional cooperation in the Pacific. In education, the University of the South Pacific is a shining example of how regional cooperation can mitigate diseconomies of scale. Fisheries is another area where collective efforts have met with considerable success. Historically, the domestic fishing industry in PICs has suffered from a low number of jobs, poor earnings from employment, and a low impact on poverty alleviation and food security. PICs’ domestic fishing fleets are estimated to account for only about 20 percent of the catch in the waters of their EEZs. The 17-nation Pacific Islands Forum Fisheries Agency (FFA) was established as an advisory body to assist member countries to manage their fishery resources in a sustainable way. Under the Harmonized Minimum Terms and Conditions for Access to FFA Member EEZs by Foreign Fishing Vessels, which has been agreed by all FFA members, foreign fishing vessels operating in the region must identify themselves to the FFA Vessel Monitoring System using an automatic location communicator. In addition, the eight countries that are parties to the Nauru agreement, which are also FFA members, have implemented a Vessel Day Scheme, which apportions the total allocation of fishing days among its members and allows for the purchase and trade of fishing days among the parties. The scheme’s purpose is to constrain catches of tuna species to sustainable levels and increase the rate of return from access fees paid by the Distant-Water Fishing Nations.

To mitigate the disadvantages from small country size and remoteness, much more needs to be done to increase regional cooperation. Air and sea transportation is an area where greater cooperation is urgently needed to reduce the fragmentation of regional networks, which continues to hamper trade and tourism development. On the trade policy front, liberalization under the Pacific Island Countries Trade Agreement was established to deepen regional trade integration and prepare PICs to form a regional free trade agreement—the Pacific Agreement on Closer Economic Relations Plus—with Australia and New Zealand. But progress has been slow and so far has brought only limited and uneven benefits to PICs, though this is not surprising given the similarities of resource endowments among these countries. A key challenge for PICs is to formulate a broad strategy that would enable them to secure greater access for their labor and agricultural products in Australia and New Zealand. At the same time, PICs should increase efforts to tap into Asia’s rapidly growing markets, particularly the tourism market. This calls for greater openness to trade and foreign direct investment across the board, and nondiscriminatory liberalization over time to maximize the benefits of economic integration with both traditional and emerging trade partners.

Other Policy Issues

Making efficient use of their very limited land resources has posed problems for many PICs. Land tenure in most of these countries is typically based on some form of communal land ownership, which can reduce the incentives for making land improvements and other forms of investment, as well as inhibit the development of mortgage-type financial instruments. Land rights issues have been particularly important in some of the resource-rich PICs, where disputes have arisen over the division of natural resource revenues among various parties, including central and local government and groups with competing land ownership claims. In Fiji, for instance, differences between smallholders in the sugar industry, who are mostly descendants of immigrants, and landowners, who are from the indigenous population, have resulted in poor agricultural practices and lack of investment in farms leading to low yields. The recent establishment of the Land Bank is a welcome step toward creating a predictable and stable supply of land with lease for long-term investment.4

4Through a land bank, indigenous landowners can allow the government to use their property for development purposes and on-lease it at market rates.
The small size of PIC markets has hindered the development of financial and capital markets in the region. With a perceived shortage of bankable projects, many banks (mostly foreign) hold an unusually high share of their deposits in the form of government and central bank securities and excess reserves. They also rely heavily for their income on fee-based services such as foreign exchange transactions, rather than intermediating between domestic savers and potential users of funds. Bank penetration in these countries is also quite low, reflecting the high cost of setting up branches in remote areas. However, with advancements in computer and telecommunications technology, banks in Fiji, Papua New Guinea, and the Solomon Islands are developing mobile-phone-based banking and microfinance, which can facilitate the expansion of banking services to the broader population.

CONCLUSIONS

Small size, remote location, high vulnerability to natural disasters, and poor natural resource endowments do not lend themselves to quick or easy fixes. Nevertheless, policies still play a critical role in reducing vulnerability to shocks and mitigating some of the disadvantages of small size and remote location.

Being able to address these constraints effectively will, to a large extent, depend on the authorities’ success in implementing a medium-term macro-fiscal framework appropriate to the particular characteristics of each individual country, and adopting sound monetary and exchange rate policies to maintain low inflation and promote adjustments to external shocks. Addressing these constraints will also depend critically on their success in implementing structural reforms and investments aimed at strengthening institutions and the governance framework, upgrading human capital, building physical infrastructure, and improving the flexibility of labor, capital, and goods markets.

Finally, PICs should cooperate through regional initiatives to strengthen their capacity to harness the region’s natural resources, including the vast marine resources of the Pacific Ocean, for the economic and social development of their populations. And income from these natural resources needs to be invested in income-generating assets for future generations.

REFERENCES


This page intentionally left blank
Strengthening Macro-Fiscal Resilience to Natural Disasters and Climate Change in the Small States of the Pacific

EZEQUIEL Cabezon, LENI HUNTER, PATRIZIA TUMBARELLO, KAZUAKI WASHIMI, and YIQUN WU

The Pacific island countries (PICs) are among the most susceptible to natural disasters in the world. The combination of location and small size heightens their vulnerability to earthquakes and weather-related extremes such as cyclones, tsunamis, hurricanes, and floods. And climate change poses risks to the very survival of some Pacific islands.

This is the first IMF study to quantify the impact of natural disasters on Pacific island economies using a cross-country approach. Previous IMF analyses have been conducted on a country-by-country basis. After a disaster occurs, the IMF typically assesses the impact of the event on the macroeconomic framework and debt sustainability (using a debt sustainability analysis) jointly with the World Bank Group and in collaboration with the Asian Development Bank (ADB).

Assessing the prospective fiscal costs and growth impact of natural disasters is vital to evaluate the long-term economic prospects of PICs. Mainstreaming estimates within the macro framework before an event occurs can help enhance countries’ disaster risk management and thus their ability to cope with such events. It can also help tailor better IMF policy advice. Integrating such prospective costs into the debt sustainability analysis could determine ex ante the magnitude of the need for fiscal and financial buffers and other sources of financing. It can also determine the fiscal space available for building infrastructure to address natural disasters and climate change. The chapter also presents a multipillar strategy that involves national, regional, and multilateral responses, including the engagement of the IMF. This integrated framework can provide a more strategic and less ad hoc framework for strengthening the resilience of PICs to natural disasters and climate change both before and after events.

STYLIZED FACTS FOR THE PACIFIC ISLANDS

PICs, on average, have been more heavily affected by natural disasters relative to other small states, and the evidence for this holds across a large range of metrics:

- **Occurrence**—During the last four decades, PICs have suffered more natural disasters than small states in other regions. PICs have experienced about 2,400 tropical cyclones in the last 60 years (World Bank 2013), and their occurrence has increased over time in line with global trends (Figures 5.1 and 5.2).

We are grateful to the Pacific island country authorities for their thoughtful comments and suggestions. We also wish to thank Sebastian Acevedo, Pedro Conceicao, Gail Hurley, Vladimir Klyuev, Nicole Laframboise, Wojciech Maliszewski, Catherine McAuliffe, Christine Richmond, Mariusz Sumlinski, and Sofia Bettencourt for their useful comments and Hoe Ee Khor for his guidance throughout the project. We thank Rosanne Heller and Antoinette Kanyabutembo for excellent editorial and administrative assistance, and Tlek Zeinullayev for outstanding research assistance.
Strengthening Macro-Fiscal Resilience to Natural Disasters and Climate Change in the Small States of the Pacific

• **Probability of a natural disaster**—Based on historical frequency, the probability of a natural disaster averages more than 20 percent a year across the small Pacific states and Papua New Guinea. Given that PICs are geographically dispersed, natural disasters do not hit all countries at once, although they may hit more than one country, as Cyclone Pam did in March 2015, inflicting heavy damage on Vanuatu and Tuvalu. The joint probability of the occurrence of natural disasters in more than one PIC is generally below 5 percent, with a maximum of 12 percent for Fiji and Papua New Guinea (Figures 5.3 and 5.4).

• **World Risk Index**—According to the World Risk Index, a composite measure of a country’s exposure to natural hazards and of its ability to cope with them, the Pacific islands have the highest risk of suffering a disaster. Among the 171 countries covered by the index, six Pacific islands rank among the 16 countries with the highest risk of experiencing a natural disaster, topped by Vanuatu (Figures 5.3 and 5.4).

• **Damage and losses**—Annual damage and losses, a better measure of the vulnerability of countries to natural disasters, averaged 2.3 percent of GDP in the PICs during 1980–2014, higher than in peers and non–small states. For example, even though disasters are more frequent in
Papua New Guinea and Fiji, damage and losses seem to be far higher in Samoa and Vanuatu. This suggests that the intensity of natural disasters and resilience to these events vary across countries. Cross-country studies (Raddatz 2009; Cavallo and Noy 2010) show that the economic effects of natural disasters depend on a range of variables, including income level, stage of development, country size, disaster type, and disaster severity. Moreover, natural disasters generally hit less-developed economies harder than developed economies. Developed economies are more highly exposed to wealth losses, whereas large and diversified economies can better absorb shocks (Auffret 2003). Damage and losses are in fact lower in Papua New Guinea, which is not a small state, than in other PICs, even though disaster occurrence is the highest.
in the region. And damages and losses are also lower in Fiji, a middle-income country. Lack of diversification also heightens vulnerability to natural disasters and other shocks (Figures 5.7 and 5.8).

Cyclone Winston, which hit Fiji in 2016, Cyclone Pam, which devastated Vanuatu and Tuvalu, and Typhoon Maysak, which hit Micronesia, both in 2015, are reminders of the Pacific islands’ vulnerability to weather-related disasters. Other events include flash floods in the Solomon Islands (April 2014), Cyclone Lusi in Vanuatu (March 2014), Cyclone Ian in Tonga and Fiji (January 2014), Typhoon Haiyan in Palau (November 2013), Cyclone Evan in Fiji and Samoa (December 2012), and a tsunami in Samoa (September 2009). Damage and losses from these events in percent of GDP averaged (median) 10 percent of GDP (Table 5.1).

Climate change poses risks to the survival of some Pacific islands. Low-lying atolls such as Kiribati, Marshall Islands, and Tuvalu are the most vulnerable to rising sea levels. But climate change also threatens agricultural income in higher islands such as Papua New Guinea and the Solomon Islands, especially by increasing water salinity in rural areas. Sea levels are already rising, and recent studies (ADB 2013; IPCC 2013) suggest they will rise further, between 1.0 and 1.7 meters in some
cases. For example, a rise of 50 centimeters would lead to a loss of 80 percent of the land in the Majuro Atoll of the Marshall Islands, and the habitability of other islands would be threatened well before lands are lost.

The interaction of climate change and natural disasters affects the Pacific islands to varying degrees. Rising temperatures are widely predicted to increase the frequency of, and risks associated with, natural disasters. Higher-elevation islands would also be hit hard, given their concentrations of population, socioeconomic activity, and infrastructure in coastal zones.¹

¹ Indeed, IOC/UNESCO and others (2011) find that more than half the population of the Pacific islands lives within 1½ kilometers of the coast.

©International Monetary Fund. Not for Redistribution
Strengthening Macro-Fiscal Resilience to Natural Disasters and Climate Change in the Small States of the Pacific

MACROECONOMIC IMPACT OF NATURAL DISASTERS

Framing the Issue

Natural disasters and climate change pose macro-critical challenges to PICs, with varying degrees of severity (Figures 5.9 and 5.10). As well as their devastating human cost, natural disasters and climate change destroy or damage infrastructure and other capital, creating considerable macroeconomic volatility. Natural disasters contribute to the higher revenue volatility experienced by PICs, relative both to other small states and to non–small states. Disasters can damage growth prospects and contribute to the low potential growth rates of PICs, and they typically worsen fiscal positions. In Chapter 10 of this volume the authors show that a natural disaster that affects 1 percent of the population in the Pacific islands causes a drop in real revenue of 0.4 percentage point, double that in other small states where the revenue drop is 0.2 percentage point. Natural disasters often expand public debt by triggering more borrowing, owing to lower revenues or increased spending, thereby intensifying balance of payments pressures.

<table>
<thead>
<tr>
<th>Most Recent Natural Disasters: Damages and Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millions of U.S. Dollars</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Fiji</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Micronesia</td>
</tr>
<tr>
<td>Palau</td>
</tr>
<tr>
<td>Samoa</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Solomon Islands</td>
</tr>
<tr>
<td>Tonga</td>
</tr>
<tr>
<td>Tuvalu</td>
</tr>
<tr>
<td>Vanuatu</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PICs mean</td>
</tr>
<tr>
<td>PICs median</td>
</tr>
</tbody>
</table>

Sources: Country authorities; Emergency Events Database (EM-DAT); and IMF staff estimates.
Note: PICs = Pacific island countries.

Figure 5.9 GDP Volatility and Intensity of Natural Disasters, 1990–2013

Sources: Emergency Events Database (EM-DAT); and IMF staff estimates.

1 Intensity = [number of deaths + 0.33*number of people affected/population]*100.
Recent Empirical Analyses

The literature reveals that the economic impact depends on the type of disaster and its magnitude, despite the stimulus of rehabilitation activity. Fomby, Ikeda, and Loayza (2013) find negative effects on growth from droughts and storms and no statistically significant effect on aggregate GDP growth from earthquakes. Raddatz (2009) finds small countries are hurt more by windstorms, but helped by moderate floods; the latter result seems to derive from higher electricity-generating capacity given more plentiful water supply. Acevedo (2014) finds negative effects from both storms and floods in Caribbean countries. Loayza and others (2009) find that although small disasters may have a positive effect in the short term (owing to reconstruction boosting growth, for example), the short-term effect of large disasters on growth is always negative.

Some international organizations have estimated the cost of natural disasters and climate change in terms of reduced economic growth. According to the World Bank (2014), natural disasters in the PICs cause damage, every year on average, of nearly 2 percent of GDP (about US$248 million). For climate change, the ADB estimates economic costs for the Pacific islands of 2.2 to 3.5 percent of GDP annually, which could rise as high as 12.7 percent by the end of the century (ADB 2013). The ADB also estimates that preparing for the effects of climate change may cost between 1½ and 2½ percent of GDP a year.²

ESTIMATING THE MACRO-FISCAL IMPACT OF NATURAL DISASTERS

As noted at the start of this chapter, this is the first cross-country IMF study assessing the impact of natural disasters on growth in the Pacific islands as a group. We use the Emergency Events Database (EM-DAT) maintained by the Centre for Research on the Epidemiology of Disasters, and the following three methodologies: (1) a panel vector autoregression model to estimate the short-term impact on growth and on the fiscal balance and its components (revenue and expenditure), (2) a

²The ADB study’s policy recommendations include mainstreaming climate change actions in development planning, adopting a forward-looking adaptation strategy, using a risk-based approach to adaptation and disaster-risk management to help prioritize climate change actions and increase the cost efficiency of adaptation measures, climate proofing of infrastructure, and improving knowledge and capacity to deal with climate uncertainties.
panel autoregressive distributed lag model to estimate the long-term effect on GDP growth, and (3) an event analysis to study growth and fiscal performance during and after natural disasters.

Vector Autoregression Model

We use annual panel data for five countries (Fiji, Samoa, the Solomon Islands, Tonga, Vanuatu) for 1970–2013 to measure the impact of natural disasters on fiscal aggregates and growth. The panel is unbalanced because a long time series for these countries is unavailable owing to data weaknesses and because many of them became independent in the late 1970s.

The model specification includes the following variables: real GDP growth, total government spending as a percent of GDP, tax revenue as a percent of GDP, the overall fiscal balance as a percent of GDP, and a measure of natural disaster intensity. Following Fomby, Ikeda, and Loayza (2013), the disaster intensity is proxied by the share of the fatalities and of the overall affected population and defined as:

$$\text{Intensity}_{it} = 100 \times \left( \frac{\text{fatalities}_{it}}{\text{total affected population}_{it}} \right).$$

The identification strategy assumes that natural-disaster damage affects real GDP growth and fiscal variables in the current period, while natural disasters are exogenous. This assumption is implemented with a Choleski decomposition. The vector autoregression is described by the equations below, with the lag structure set to one in order to minimize the number of parameters estimated:

$$Y_{i,t} = A_{i,0} + A_{i,1} Y_{i,t-1} + B_{i,0} X_{i,t} + B_{i,1} X_{i,t-1} + u_{i,t},$$

where

$$Y_{i,t} = \begin{bmatrix} \Delta \text{Overall fiscal balance}_{i,t} \\ \Delta \text{Tax revenue}_{i,t} \\ \Delta \text{Total government expenditure}_{i,t} \\ \text{Real GDP growth}_{i,t} \end{bmatrix},$$

$$X_{i,t} = [\text{Natural disaster intensity}_{i,t}],$$

with $i = \{\text{Fiji, Samoa, the Solomon Islands, Tonga, Vanuatu}\}$.

The estimation results show that natural disasters reduce short-term growth. The effects of a natural disaster with an intensity affecting 1 percent of the population are shown in the impulse responses plotted in Figure 5.11. The shock causes growth to contract by about 0.5 percentage point in the year of the disaster. A natural disaster that causes damage and losses equal to 1 percent of GDP causes an average drop in GDP of 0.7 percentage point in the year of the disaster. This is equal to an annual drop on average of 2.1 percent for all the Pacific islands, based on historical data on damage and losses (Figure 5.12).

Natural disasters also worsen the fiscal positions of PICs. For damage and losses equal to 1 percent of GDP, the fiscal balance deteriorates by 0.5 percent of GDP in the year after the disaster. Spending rises by 0.7 percentage point of GDP in the year of the disaster, while tax revenue falls by 0.2 percentage point of GDP before rising by the same amount in the following year. The fiscal deterioration is not as large as the drop in tax revenue and increase in expenditure suggest, which can be explained by the role that grants play in those PICs experiencing natural disasters. Tax revenue seems to rebound faster than GDP.4

3The fiscal variables are first-differenced to guarantee stationarity. See the annexes for further details.
4A natural disaster reduces tax revenue for two reasons: first because of lower GDP and second because of possible disruption in the payment infrastructure system (or the infrastructure used to collect taxes). In the year of the disaster there could be a disruption of the services through which taxes are collected (for example, banks or tax office). The year after the disaster this issue dissipates and tax revenue starts to grow at a higher rate than GDP. Furthermore, firms and households allocate funds to emergency expenditure and delay tax payments, which are resumed the year after the disaster.
These results are robust to an alternative definition of disaster intensity (Figure 5.13). This includes damage and losses in percent of GDP as the disaster variable instead of disaster intensity.\(^5\) The results are broadly similar; the main difference is that GDP growth returns to the predisaster trend faster than in the first specification and that spending consistently picks up in the year after the disaster, with possible delays in reconstruction activity. It also takes longer for the fiscal balance to return to the preshock trend.

The results are also robust to global shocks and different lag specifications. Estimations that include two and three lags present analogous impulse responses, in terms of the sign of the responses. Including real world GDP growth and changes in oil prices as measures of global shocks affects the estimations minimally.

\(^5\)The EM-DAT Glossary notes: “The economic impact of a disaster usually consists of direct consequences (e.g., damage to infrastructure, crops, and housing) and indirect consequences (e.g., loss of revenues, unemployment, and market destabilization) for the local economy. The estimated damages and losses are in thousands of U.S. dollars.”
Figure 5.12  Pacific Island Countries: Short-Term Impact of Natural Disasters on GDP Growth (Percentage points)

Sources: Emergency Events Database (EM-DAT); and IMF staff estimates.

Note: According to the vector autoregression model, for every incident of damage and losses equivalent to 1 percent of GDP, GDP growth drops by 0.7 percentage point.

Figure 5.13  Response of Growth and Fiscal Aggregates to 1 Percent of GDP Damage Shock

Sources: Emergency Events Database (EM-DAT); and IMF staff estimates.
We estimate the impact of natural disasters on long-term growth using a panel autoregressive distributed lag model with fixed effects. We use annual panel data for five countries (Fiji, Papua New Guinea, Samoa, Tonga, Vanuatu) for 1970–2014. The dependent variable is real GDP (in log). The explanatory variables are population, capital stocks (both in log), and damage and losses (in percent of GDP). The capital stock series is constructed applying the perpetual inventory method.

The econometric result shows that for damage and losses equal to 1 percent of GDP, growth in PICs falls on average by 0.3 percentage point over 10 years (Figure 5.14 and Annex 5.1). This means that during 1980–2014 trend growth was 0.7 percentage point lower than it would have been without natural disasters. The actual average growth for the PICs during the same period averaged 2.6 percent; without natural disasters, the average would have been 3.3 percent (Figures 5.15 and 5.16).

The long-term impact of natural disasters on GDP growth is substantial. Assume that before a disaster, GDP grows at 3 percent. The 10-year growth on a cumulative basis would then be 34 percent. After a disaster, with damage and losses equal to 60 percent of GDP, growth falls by 18 percentage points (that is, 60 multiplied by 0.3), resulting in a 10-year growth loss of 16 percent on a cumulative basis (Table 5.2).

Figure 5.14  Pacific Island Countries: Long-Term Impact of Natural Disasters on Trend GDP (1980 = 100)
Sources: Emergency Events Database (EM-DAT); and IMF staff estimates.
Note: Trend GDP is calculated as a 10-year moving average of real GDP.

Figure 5.15  Pacific Island Countries: Long-Term Impact of Natural Disasters on Trend Growth (Percentage points)
Sources: Emergency Events Database (EM-DAT); and IMF staff estimates.
Note: According to the panel autoregressive distributed lag model, for every incident of damage and losses equivalent to 1 percent of GDP, GDP growth drops by 0.3 percent over 10 years. Given historical data on damages and losses, the average GDP growth drop during 1980–2014 was 0.7 percentage point.
Using an event analysis, we study growth performance during and after natural disasters. We define a natural disaster episode as one that results in damage and losses of at least 10 percent of GDP. In contrast to the other two econometric models, event analysis focuses on the relationship between growth performance and natural disaster shocks before, during, and after an episode. While event analysis does not attempt to determine the direction of causality, it represents a useful complement to econometric models because it allows us to uncover the nonlinear dynamics of economic relationships that are likely to be missed by standard econometric specifications.

A main finding is that a loss in output relative to the predisaster GDP growth trend persists after two years, with the fiscal balance remaining as negative as in the year of the disaster. While not a conclusive determinant of the growth effects of natural disasters, these events were probably dominant factors affecting the economies at the time. On average growth was zero in the year of the disaster. While growth rebounds fairly quickly (on average two years after the disaster), it is below the growth rate prior to the disaster. The still-large fiscal balance deterioration is consistent with the results of the vector autoregression and may reflect infrastructure rehabilitation and rebuilding (Figures 5.17 and 5.18).

**Event Analysis**

**Illustration of Long-Term Impact of Natural Disasters on GDP Growth**

<table>
<thead>
<tr>
<th></th>
<th>Before Natural Disaster</th>
<th>After Natural Disaster</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual GDP growth (in percent)</td>
<td>3.0</td>
<td>1.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Cumulative GDP growth over 10 years (in percent)</td>
<td>34.0</td>
<td>16.0</td>
<td>18.0</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations.

Note: Assumes damage and losses of 60 percent of GDP. The number 18 is equivalent to 0.3 × 60. See Annex Table 5.1.1 for the coefficient on damage and losses. Since real GDP is in log while damage and losses are expressed in percent of GDP, the coefficient 0.003 is multiplied by 100.

1 Calculated as \((1 + \text{annual growth rate})^{10}\).  

**Increasing Macro-Fiscal Resilience by Enhancing Disaster Risk Management: A Multipillar Framework**

Policies that support strong fundamentals can foster resilience. Some PICs have rebuilt or made progress in rebuilding fiscal buffers since the global financial crisis. But more than half still have less-comfortable buffers (higher debt, lower fiscal balances and reserves) than before the crisis. Enhancing resilience to natural disasters and climate change demands a multipillar strategy at the national, regional, and multilateral levels, and it also requires enhancing countries’ risk-management capacity (Figure 5.19). The key pillars of disaster risk management before the event include (Laframboise and Loko 2012):
**Figure 5.17**  Event Analysis: Real GDP Growth before and after Natural Disasters (Percent)

Sources: Centre for Research on the Epidemiology of Disasters, International Disaster Database; and IMF staff estimates.

Note: Based on natural disasters with damage and losses larger than 10 percent of GDP during 1970–2013. Average of two years before and average of two years after. The median damage of these natural disasters was 26 percent of GDP.

**Figure 5.18**  Event Analysis: Fiscal balance before and after Natural Disasters (Percent)

Sources: Center for Research on Epidemiology for Disasters, International Disaster Database; and IMF staff estimates.

Note: Based on natural disasters with damage and losses larger than 10 percent of GDP during 1970–2013. Average of two years before and average of two years after. The median damage of these natural disasters was 26 percent of GDP.

**Figure 5.19**  Multipillar Framework: Strengthening Resilience before and after Disasters

Note: DSAs = debt sustainability analyses; PFM = public financial management. Green shows the role of the IMF.
- Identifying and undertaking risk assessment. At the national level, building resilience before an event entails identifying risks and explicitly integrating these risks into the fiscal frameworks and budget planning.
- Providing self-insurance by building policy buffers to enhance resilience to shocks (lower debt, higher fiscal balances and reserves).
- Reducing risks by enhancing preparedness, including by investing in “smart” infrastructure that can better cope with climate change and natural hazards and by enhancing debt-management capacity.
- Transferring risk through private or sovereign insurance and through multilateral risk sharing (that is, international safety net):
  - Insurance is provided through the Pacific Catastrophe Risk Insurance Pilot for the Pacific islands, a joint initiative between the Secretariat of the Pacific Community, the World Bank Group, and the ADB, with financial support from the government of Japan and the Global Facility for Disaster Reduction and Recovery. This very innovative scheme, covering Marshall Islands, Samoa, the Solomon Islands, Tonga, and Vanuatu, was launched in January 2013 and concluded its first phase in October 2014. The pilot began its second phase in November 2014 and is expected to be concluded in October 2015. The scheme offers immediate funding in the wake of severe natural disasters (World Bank 2013) to currently participating countries: the Cook Islands, Marshall Islands, Samoa, Tonga, and Vanuatu. The government of Japan provided an additional US$1 million to fund premium subsidies for four of the participating countries (the Cook Islands is self-funding). The pilot uses “parametric triggers” such as cyclone intensity or earthquake magnitude to determine payouts. In January 2014 Tonga became the first country to benefit from a payout under the pilot of US$1.3 million, and Vanuatu received US$1.9 million after Cyclone Pam. Damages and losses were US$45.4 million in Tonga and US$467 million in Vanuatu.
  - Membership in multilateral organizations could be seen as a risk-pooling mechanism.
  - Some PICs are currently discussing the establishment of a subregional reserve pooling arrangement. Member countries of the Melanesian Spearhead Group (Fiji, Papua New Guinea, the Solomon Islands, Vanuatu) are holding discussions on setting up an emergency stabilization fund to assist members in balance of payments crisis situations, particularly when members encounter imminent risks of erosion of foreign exchange and the consequent inability to finance imports and external debt.

Coping with natural disasters coupled with ensuring a resilient recovery is the main pillar of disaster risk management after an event. The main actions at the national level include emergency response and reconstruction efforts. A sound reconstruction program should consist of measures to reduce risks, such as resettlement away from coastlines, where feasible, and infrastructure investment. Reconstruction can provide an opportunity to accelerate broader growth-enhancing structural reforms.

Donor financing will remain important in enhancing resilience to cope with natural disasters and climate change as the PICs are too small and the costs too high to be fully internalized by building buffers. Moreover, building buffers also has an opportunity cost. Participation in insurance mechanisms is very promising, but so far the disbursement has been limited. However, increased global resources are being made available for climate change finance under the United Nations Framework Convention on Climate Change, with a new target of raising US$100 billion a year by 2020 to cover rising climate change costs. But access to global funding for the PICs is challenging because of capacity constraints, so bilateral funding remains critical. Moreover, the complexity of numerous financing

---

6The Solomon Islands chose not to continue its participation in the insurance pilot because it did not qualify for a payout after the flood in April 2014. Disbursements are linked to specific physical parameters (for example, the wind speed triggering a cyclone) that were not triggered during the flood.
instruments can add to the overall donor coordination challenge (Annex 5.2). Donor funding is a necessary part of resilience for small Pacific island states. Donor coordination should also be strengthened among multilateral institutions, donors, national authorities, and civil society, especially given the limited administrative capacity of these countries.

THE ROLE OF THE IMF

The IMF is increasingly incorporating macro-critical challenges posed by natural disasters and climate change into its work. The IMF has been looking at how to help countries respond through policy advice (surveillance), financial support, and technical assistance and training to build capacity (IMF 2012). The IMF recently published a staff guidance note on small states that recognizes the importance of natural disaster management and climate change (IMF 2014a). Among other policy messages, the note emphasizes the need to enhance resilience to shocks and climate change. It incorporates several of the lessons cited in this chapter, including the potential for recovery programs to pursue growth-enhancing reforms. The guidance note recognizes the complex nature of climate-change-financing arrangements and the problems posed by lack of capacity in accessing climate change resources. As such, in their consideration of fiscal space in the surveillance context, the IMF staff is advised to be sensitive to the long-term implications of climate change for the public investment needs of small states and to be ready to consider how these might be financed.

Surveillance

The 2013 IMF Board paper on small states (IMF 2013a) indicates that fostering resilience before the event requires:

- Integrating natural disaster risks into macro frameworks to determine the magnitude of the buffers (or self-insurance) needed and of the required outside insurance.7
- Ensuring sufficient flexibility to help redeploy spending rapidly.
- Ensuring sufficient policy space (external reserves and low debt) to help mitigate potential balance of payments shortfalls.

After the event, an efficient response—that is, in the area of resilience—requires greater transparency to ensure the effective use of disaster assistance, strengthening coordination among development partners and authorities, and pursuing growth-enhancing structural reforms.

The costs of natural disasters and climate change are also included in the debt sustainability analysis and scenario analysis in the Article IV consultations. Kiribati’s recent Article IV reports (IMF 2011, 2014b) describe climate change vulnerabilities that have slowed Kiribati’s achievement of poverty reduction goals owing to the need to divert resources from development spending to building seawalls. Debt sustainability analyses on Kiribati have highlighted the fiscal risks arising from uncertain climate change costs and the importance of external assistance for concessional finance (IMF 2011). The 2014 Article IV Consultation Staff Report for Tonga (IMF 2014c) assessed the impact of Cyclone Ian, which hit the country in January 2014 provoking damages and losses of about 10 percent of GDP. The 2015 Article IV Consultation Staff Report for Samoa analyzed the impact of natural disasters on debt (IMF 2015b).

Financial Support

The IMF offers financing to meet a broad range of urgent balance of payments needs, including those arising from natural disasters. Although sometimes limited in magnitude, IMF financial support

---

7The costs and policy frameworks will differ from country to country; therefore policy advice needs to be carefully tailored.
catalyzes external finance from other sources. IMF financing to support countries hit by natural disaster includes:

- **The Rapid Credit Facility (RCF)**, which provides rapid financial support in a single, up-front payout for low-income countries facing urgent financing needs. Financial assistance under the RCF is provided as an outright disbursement to Poverty Reduction and Growth Trust (PRGT)-eligible members that face an urgent balance of payments need, and where a full-fledged economic program is either not necessary or not feasible. Financing under the RCF carries a zero interest rate through 2016 and has a grace period of 5½ years and a final maturity of 10 years. The Rapid Financing Instrument (RFI) is similar to the RCF and designed for situations where a full-fledged economic program is either not necessary or not feasible. Financial assistance provided under the RFI is subject to the same financing terms as the Flexible Credit Line, the Precautionary and Liquidity Line, and Stand-By Arrangements, and should be repaid within 3½ to 5 years. Both lending facilities are designed for members that do not require a full-fledged economic reform program (for example, because of the transitory and limited nature of the shock) or where such a program is not feasible because the need is urgent or policy implementation capacity is limited.

  - **Samoa** was hit by Tropical Cyclone Evan in December 2012, leading to loss of life and damage estimated at 30 percent of GDP. A request for a one-off disbursement of US$8.6 million under the RCF facility was approved by the IMF Board in May 2013 (IMF 2013b). In 2009, Samoa was hit by a tsunami whose damage and losses were estimated at 25 percent of GDP, and IMF financial assistance (equivalent to US$9.3 million) was also provided (IMF 2010).

  - **Vanuatu**, in June 2015, received financial support from the IMF following the devastating cyclone of March 2015. The IMF Board approved a disbursement of about US$11.9 million under the RCF and disbursement of about US$11.9 million under the RFI (IMF 2015a). As in the case of Samoa, this financial assistance was intended to help Vanuatu cope with its immediate balance of payments needs and to catalyze critical donor support for the recovery.

- **Augmentation of an existing program**—When a country with an IMF-supported program is hit by a natural disaster, augmented financing under the existing program could be the usual channel for providing additional financial support.

- **IMF Catastrophe Containment and Relief (CCR) Trust**—This replaced the Post-Catastrophe Debt Relief Trust in February 2015. It allows the IMF to join international debt relief efforts when poor countries are hit by catastrophic natural disasters or public health disasters. The IMF can provide debt relief to free up resources to meet exceptional balance of payments needs created by the disaster, rather than having to assign those resources to debt service. The Catastrophe Containment and Relief Trust is available to 38 low-income countries eligible for concessional borrowing through the Poverty Reduction and Growth Trust that also have either income per capita below US$1,215 or, for small states, a population below 1.5 million and income per capita below US$2,430. Among the PICs, only the Solomon Islands meets these criteria. A country qualifies under the trust if it is hit by a disaster that directly affects at least one-third of the population and destroys more than a quarter of productive capacity. This is estimated by such early indications as destroyed structures and the impact on key economic sectors and public institutions, or by damage exceeding 100 percent of GDP.

**Capacity Development**

IMF policy advice on coping with natural disasters is also supported by technical assistance and training. For example, technical assistance on public financial management, which improves budget planning and enhances transparency of public funds, helps improve the foundation on
which PICs seek natural disaster and climate change assistance. A sound public financial management system is essential to enhancing risk management related to these events by incorporating disaster risk into fiscal planning. The IMF also supports public financial management reform needed for climate change access through Public Expenditure and Financial Accountability assessments.\(^8\)

Public financial management reform and more transparent aid management policies enhance the effectiveness and quality of public expenditure, and so offers benefits that extend beyond climate change and natural disaster management. A Nauru case study by the Pacific Islands Forum Secretariat (2013a) offers several lessons on this, including the benefits of integrating climate change into national plans, policies, and budgets, and of tracking spending through budget systems. The study also cites the difficulties in quantifying the extent of external financing available for climate change and distinguishing this financing from existing development assistance. These challenges are likely to divert capacity from other aspects of core policy management.

The IMF also provides technical assistance to all members interested in adopting environmental tax reforms. Fiscal policies should take center stage in trying to get energy prices to reflect the harmful environmental side effects associated with energy use, notably climate change (de Mooij, Keen, and Parry 2012).\(^9\)

The Pacific Financial Technical Assistance Centre, in coordination with the World Bank’s Disaster Risk Financing and Insurance Program, held a regional workshop in March 2015 hosted by the Pacific Islands Forum Secretariat on incorporating natural disaster risks into the fiscal planning process. The workshop addressed such issues as special budgetary procedures for providing rapid access to emergency funding, the macroeconomic and fiscal impact of natural disasters, incorporating disaster risk into the fiscal planning process, and disaster risk financing.

**CONCLUSIONS**

Pacific island countries face severe challenges from natural disasters and climate change. These events have an impact on both potential growth and public finances.

A more strategic approach is needed to help countries deal with the increasing frequency and magnitude of these events. Explicit recognition of the costs of natural disasters and climate change in baseline macro frameworks and debt sustainability analyses is important, particularly given the risks that these events will become increasingly severe over time. While building policy buffers is especially relevant in the small states of the Pacific to enhance resilience before these events occur, these countries will need to continue to be supported by access to external assistance and insurance schemes. In addition to providing financing support, the IMF can also help by continuing to provide technical assistance and training to enhance countries’ risk-management capacities, thereby continuing to also foster resilience before disasters occur.

---

\(^8\)The Public Expenditure and Financial Accountability framework is one of the tools that helps assess the health of public financial management systems. The Pacific Islands Forum Secretariat (2013b) developed a Pacific Climate Change Financing Assessment Framework, which assesses a country’s ability to access and manage climate change resources, and its reports provide a baseline for the framework.

\(^9\)See also a speech by IMF Managing Director Christine Lagarde at the Center for Global Development in July 2014, which can be found at https://www.imf.org/external/np/speeches/2014/073114.htm.
ANNEX 5.1. AUTOREGRESSIVE DISTRIBUTED LAG MODEL

The autoregressive distributed lag (ARDL) methodology is valid regardless of whether the regressors are exogenous or endogenous, and irrespective of whether the underlying variables are integrated of order 1 or zero, as shown in Annex Table 5.1.1.

<table>
<thead>
<tr>
<th>Dependent Variable: Real GDP (log)</th>
<th>0.344***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital stock (log)</td>
<td></td>
</tr>
<tr>
<td>Population (log)</td>
<td>0.628***</td>
</tr>
<tr>
<td>Damage and losses (percent of GDP)</td>
<td>−0.003**</td>
</tr>
<tr>
<td>F-statistics for cointegration</td>
<td>4.851***</td>
</tr>
<tr>
<td>Observations</td>
<td>225</td>
</tr>
<tr>
<td>Number of countries</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation.
Note: The lag length was selected using Schwarz’s Bayesian criterion. Estimation period: 1970–2014.
*** p<0.01, ** p<0.05, * p<0.1.
## ANNEX 5.2. SOURCES OF INTERNATIONAL FINANCING TO COPE WITH NATURAL DISASTERS AND CLIMATE CHANGE

### ANNEX TABLE 5.2.1

<table>
<thead>
<tr>
<th>Institution</th>
<th>Programs/Funds</th>
<th>Purpose</th>
<th>Period</th>
<th>Amounts</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Development Bank (ADB)</td>
<td>Pacific Climate Change Program (PCCP)</td>
<td>Climate change</td>
<td>2011–14</td>
<td>US$240 million</td>
<td>The ADB is delivering an integrated program to its Pacific Developing Member Countries (DMCs) to address both mitigation and adaptation to climate change, focusing on climate and disaster proofing of the investment portfolio and scaling up renewable energy. In the Pacific, the ADB has facilitated access to international climate financing primarily as cofinancing of investments. The ADB has set up dedicated climate facilities funded by its own resources and bilateral partners. Out of the ADB's own funds, approximately US$172 million funded adaptation and mitigation costs of projects during 2011–14. In addition, the ADB mobilized about US$68 million from global funds from the Least Developed Country Fund (LDCF) and the Climate Investment Fund's Pilot Program for Climate Resilience (PPCR).</td>
</tr>
<tr>
<td>ADB</td>
<td>Asia Pacific Disaster Response Fund (APDRF)</td>
<td>Natural disasters</td>
<td></td>
<td>US$3 million per event</td>
<td>Incremental grant resources for developing member countries impacted by a major natural disaster, with quick-disbursing grants to assist ADB DMCs to restore life-saving services and augment aid provided by other donors. Since 2011, ADB has approved eight APDRF projects in the Pacific.</td>
</tr>
<tr>
<td>ADB</td>
<td>Disaster Response Facility (DRF)</td>
<td>Natural disasters</td>
<td>Since 2011</td>
<td>US$26 million</td>
<td>The DRF supports emergency assistance, restoration, and rehabilitation and reconstruction needs. The assistance is provided in the form of grants or loans depending on a country's status. In the case of a disaster, countries eligible for financing by the Asian Development Fund can get up to 100 percent of their annual performance-based allocation (PBA) or US$3 million per disaster, whichever is higher; a blend country can receive up to 3 percent of its annual PBA. Since 2011, the ADB has helped Pacific countries access US$26 million from the DRF through three projects (in Samoa, the Solomon Islands, and Tonga).</td>
</tr>
<tr>
<td>European Union</td>
<td>African, Caribbean and Pacific (ACP)-EU Building Safety and Resilience in the Pacific</td>
<td>Disaster risk reduction and climate change adaptation</td>
<td>2013–18</td>
<td>€20 million</td>
<td>Strengthen the capacity of PICs to address existing and emerging challenges with regard to the risks posed by natural hazards and related disasters, while maximizing synergies between disaster risk reduction (DRR) strategies and climate change adaptation (CCA).</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Institution</th>
<th>Programs/Funds</th>
<th>Purpose</th>
<th>Period</th>
<th>Amounts</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>ACP-EU Natural Disaster Risk Reduction</td>
<td>Disaster risk reduction and climate change</td>
<td>2011–20</td>
<td>Total: €80 million</td>
<td>Address prevention, mitigation, and preparedness in response to natural hazards in ACP member states, focusing on mainstreaming disaster risk reduction, risk identification and assessment, early warning systems and communication on DRR, and risk transfer and integration of DRR into recovery.</td>
</tr>
<tr>
<td></td>
<td>Programme (NDRR)</td>
<td>adaptation</td>
<td></td>
<td>Indicative Pacific: €13.7 million</td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Intra-ACP Global Climate Change Alliance</td>
<td>Climate change adaptation and mitigation</td>
<td>2012–16</td>
<td>€37 million</td>
<td>Integrated strategies, mainstreaming climate change in national development planning and budgeting, institutional and capacity strengthening, and fostering dialogue and exchange of experiences to address climate change in developing economies.</td>
</tr>
<tr>
<td></td>
<td>(GCCA)</td>
<td></td>
<td></td>
<td>Indicative Pacific: €8.0 million</td>
<td></td>
</tr>
<tr>
<td>European Union/UNESCAP/ILO/UNDP</td>
<td>Enhancing the Capacity of Pacific Island</td>
<td>Climate change and migration</td>
<td>Ends in 2016</td>
<td>€2.1 million</td>
<td>Capacity building on climate-change-induced migration financed through the European Initiative for Democracy and Human Rights (EIDHR).</td>
</tr>
<tr>
<td></td>
<td>Countries to Address the Impacts of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Climate Change on Migration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Global Index Insurance Facility (GIIF)</td>
<td>Disaster risk reduction</td>
<td>2008–16</td>
<td>€24.5 million (all ACP countries)</td>
<td>Reduce the vulnerability of the ACP population to external shocks/natural disasters through expansion of the use of index insurance as a risk management tool in ACP countries. GIIF seeks to introduce a new and more efficient approach (indexed or parametric insurance) for mitigating weather/catastrophic risks in developing economies.</td>
</tr>
<tr>
<td>European Union</td>
<td>Global Climate Change Alliance (GCCA) South</td>
<td>Mainstreaming adaptation</td>
<td>2011–15</td>
<td>€10 million</td>
<td>Secretariat of the Pacific Community, Secretariat of the Pacific Regional Environment Programme: Overall development and poverty reduction, coastal zone management, health, infrastructure, and water and sanitation.</td>
</tr>
<tr>
<td></td>
<td>Pacific</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Global Climate Change Alliance (GCCA) Papua</td>
<td>UN-REDD – Forest</td>
<td>2013–17</td>
<td>€8.6 million</td>
<td>Contributes to the implementation of the national REDD readiness plan.</td>
</tr>
<tr>
<td></td>
<td>New Guinea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Global Climate Change Alliance (GCCA) Samoa</td>
<td>Mainstreaming adaptation/disaster risk</td>
<td>2012–15</td>
<td>€3.0 million</td>
<td>Contributes to the implementation of the national Water for Life Sector Plan – Water and sanitation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Global Climate Change Alliance (GCCA) The</td>
<td>Mainstreaming adaptation</td>
<td>2011–14</td>
<td>€2.8 million</td>
<td>Overall development and poverty reduction. Contributes to the implementation of the Solomon Islands National Adaptation Programme of Action (NAPA) priorities and the National Disaster Risk Management Plan.</td>
</tr>
<tr>
<td></td>
<td>Solomon Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European Union</td>
<td>Global Climate Change Alliance (GCCA) Timor-</td>
<td>Mainstreaming adaptation</td>
<td>2013–18</td>
<td>€4.0 million</td>
<td>Overall development and poverty reduction, forests, agriculture, and natural resource management.</td>
</tr>
<tr>
<td></td>
<td>Leste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
European Union

Global Climate Change Alliance (GCCA) Vanuatu
Mainstreaming adaptation/disaster risk reduction
2010–14
€3.2 million
Overall development and poverty reduction, agriculture, natural resource management, and water and sanitation. Contributes to the implementation of the measures identified in the NAPA.

European Union

Pro-Resilience Action
Building resilience in response to food crises
2014–20
Indicative €65 million a year (worldwide)
Supporting the poor and food insecure to react to crises by addressing the effects of the crises and strengthening their resilience. The action is worldwide, and Pacific small island developing states can access support if they are stricken by a food crisis. The program does not respond specifically to natural disasters. However, the program can be activated if a natural disaster has impacts in terms of food and nutrition security.

European Union

Adapting to Climate Change and Sustainable Energy (ACSE)
Climate change
2014–19
€35.5 million
ACSE will help 15 Pacific island countries (PICs) adapt to adverse effects of climate change and enhance their energy security at national, provincial, and local/community levels. The objectives are: (1) create and/or strengthen national technical expertise on climate change adaptation and sustainable energy, (2) improve cost-effective and efficient energy systems to reduce fossil fuel dependency, and (3) improve communities’ adaptive capacity to cope with climate change challenges. Another aim of the ACSE program is to enhance sustainable livelihoods through the support of government institutional efforts and empowering communities to increase their self-reliance and their ability to cope with the effects of climate change through appropriate practices in agriculture and coastal fishery, by disseminating improved plant varieties that are resistant to saltwater, by securing their daily water supply, and by improving their access to energy, among other initiatives.

United Nations

Adaptation Fund (AF)
Established 2001
The Adaptation Fund was established to finance concrete adaptation projects and programs in developing-country parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change. The Adaptation Fund is financed from the share of proceeds of the clean development mechanism (CDM) project activities and other sources of funding. The share of proceeds amounts to 2 percent of certified emission reductions (CERs) issued for a CDM project activity. The Adaptation Fund is supervised and managed by the Adaptation Fund Board (AFB). The AFB is composed of 16 members and 16 alternates and meets at least twice a year.

(continued)
### Selected Programs and Funds

<table>
<thead>
<tr>
<th>Institution</th>
<th>Programs/Funds</th>
<th>Purpose</th>
<th>Period</th>
<th>Amounts</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Bank/United Nations</td>
<td>Global Facility for Disaster Reduction and Recovery (GFDRR)</td>
<td>Reduce vulnerability to natural disasters and climate change</td>
<td>Established 2006</td>
<td>For projects US$100,000 to US$1 million</td>
<td>GFDRR is a partnership of 35 countries and six international organizations committed to helping developing economies reduce their vulnerability to natural hazards and adapt to climate change. The partnership's mission is to mainstream disaster risk reduction and climate change adaptation in country development strategies by supporting a country-led and country-managed implementation of the Hyogo Framework for Action (HFA).</td>
</tr>
<tr>
<td>World Bank Group, International Development Association (IDA)</td>
<td>Immediate Response Mechanism (IRM)</td>
<td>Natural disasters</td>
<td>Established December 2011</td>
<td>5 percent of undisbursed IDA project balances, or SDR 5 million.</td>
<td>The IRM allows IDA countries to rapidly access up to 5 percent of their undisbursed IDA investment project balances following a crisis (natural disasters and economic shocks). Small states and countries with small undisbursed project balances will be able to access up to US$5 million. The IRM complements longer-term emergency response tools available to IDA countries, such as the Crisis Response Window.</td>
</tr>
<tr>
<td>World Bank Group, IDA</td>
<td>Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)</td>
<td>Natural disasters</td>
<td>November 2012 to November 2014</td>
<td>US$45 million in aggregate coverage</td>
<td>Participating countries select per-peril coverage and option of coverage attaching at loss levels of a severity of recurrence of 1 in 10, 15, or 20 years (or less frequent). Five PICs participated in the initial 2012–13 pilot, which had an aggregate limit of US$45 million and an annual expected loss of US$1 million. The scheme covers Marshall Islands, Samoa, the Solomon Islands, Tonga, Vanuatu, and the Cook Islands.</td>
</tr>
<tr>
<td>World Bank Group (Trustee)</td>
<td>Climate Investment Funds (CIF)</td>
<td>Climate change</td>
<td>Established 2008</td>
<td></td>
<td>The CIF provides funding to 48 developing and middle-income countries. Funding is from contributor countries, with co-funding sought from the private sector. The CIF fosters partnerships through a programmatic approach, whereby CIF countries, with support from the multilateral development banks, lead investment planning and implementation. The CIF has four funding windows: (1) the $5.5 billion Clean Technology Fund (CTF); (2) the $639 million Forest Investment Program (FIP); (3) the $1.3 billion Pilot Program for Climate Resilience (PPCR); and (4) the $551 million Scaling Up Renewable Energy in Low Income Countries Program (SREP).</td>
</tr>
<tr>
<td>Organization</td>
<td>Fund Name</td>
<td>Category</td>
<td>Start and End Year</td>
<td>Amount</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------</td>
<td>-------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>World Bank Group</td>
<td>IDA</td>
<td>Climate and disaster resilience</td>
<td>2011–15</td>
<td>US$150 million</td>
<td>The IDA-17 Replenishment requires Country Partnership Frameworks to incorporate climate and disaster risk considerations, and for all IDA operations to be screened for short- and long-term climate change and disaster risks, integrating resilience measures as appropriate. This includes both concessional credits and IDA grants that are used to support climate and disaster resilience.</td>
</tr>
<tr>
<td>World Bank Group</td>
<td>International Bank for Reconstruction and Development (IBRD)</td>
<td>Climate and disaster resilience</td>
<td>2011–15</td>
<td>US$15 million</td>
<td>The IBRD aims to reduce poverty in middle-income countries and creditworthy poorer countries by promoting sustainable development through loans, guarantees, risk-management products, and analytical and advisory services.</td>
</tr>
<tr>
<td>Australian Department of Foreign Affairs and Trade (DFAT)</td>
<td>DFAT</td>
<td>Climate change</td>
<td>Total funding for 2010/11 and 2012/13 was A$599 million</td>
<td></td>
<td>Support to developing countries to adapt to climate change, reduce their carbon emissions, and pursue cleaner development. Focus is on least developed countries and small island developing states. Efforts will build on work to reduce emissions from deforestation, pilot low emission development pathways, and engage in key international development and environment forums.</td>
</tr>
<tr>
<td>Japan</td>
<td>Japan's Assistance Package for PICs at the 7th Pacific Islands Leaders Meeting (PALM7)</td>
<td>Climate change</td>
<td>2015–17</td>
<td>US$450 million</td>
<td>Japan will provide assistance to PICs that are battling rising sea levels and natural calamities as a result of global warming. Focus is on disaster risk reduction, climate change, environment, people-to-people exchanges, sustainable development, maritime issues and fisheries, and trade, investment, and tourism.</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation.

REFERENCES


