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Rise of Digital Money

Implications for Pacific Island Countries

Prepared by Yong Sarah Zhou, Tao Sun, Anca Paduraru,
Arvinder Bharath, Stephanie Forte, Kathleen Kao,
Yinqiu Lu, Maria Fernanda Chacon Rey,
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Acronyms and Abbreviations

ACH	Automated Clearing House
AML/CFT	anti-money laundering and combating the financing of terrorism
CBDC	central bank digital currency
CBR	correspondent banking relationship
CSD	Central Securities Depository
FATF	Financial Action Task Force
FSDS	Financial Services Demand Side Survey
ML	money laundering
PIC	Pacific island country
PSP	Payment Service Provider
RTGS	Real-Time Gross Settlement
TF	terrorist financing
USD	United States Dollar
WBPI	World Bank Poverty and Inequality Platform

Executive Summary

The digital money revolution has progressed rapidly, and policymakers in the Pacific island countries (PICs) are keen to leverage the opportunities to develop payment systems and expand financial inclusion. Among the world's most geographically remote and dispersed countries, PICs tend to face challenges to financial services and inclusion, partly due to their relatively small market size and unique physical characteristics. These challenges are heightened by the progressive reduction in correspondent banking relationships (CBRs),¹ which is disproportionately impacting PICs, especially as they are highly dependent on remittance flows. Therefore, PICs are keenly exploring digital money's potential role in alleviating the adverse impact of reduction in CBRs, developing payment systems, lowering the cost and barriers for financial services, and promoting financial inclusion.

Digital money, if well designed and governed, has the potential to enhance pursuit of public policy objectives such as financial inclusion and better cross-border connectivity. In an increasingly interconnected world, digital money and related financial innovation offer advantages such as efficiency, accessibility, and security. Digital money has the potential to streamline transactions and redefine domestic payments, as well as to empower individuals in underserved regions, providing them with access to financial services and government support. Moreover, digital money could help facilitate international payments, reduce remittances costs, and mitigate the adverse impacts of CBRs' withdrawals.

Ill-prepared adoption of digital money may bring multiple and acute risks for PICs. Ill-prepared introduction of digital money may result in financial and economic disruptions. For example, in PICs with low capacity and digital readiness, prolonged operational disruptions may lead to serious financial stability risks. Weaknesses in anti-money laundering and combating the financing of terrorism (AML/CFT) frameworks have been one source of CBR fragility among others in the PICs, and digital money may introduce new money laundering and terrorist financing (ML/TF) risks.

PICs, as many other similar countries, are constrained by capacity and resources in introducing digital money. The digital infrastructure and institutional (legal, regulatory, and supervisory) frameworks needed to design and implement digital money successfully tend to be substantially underdeveloped for some PICs. In addition, PICs have limited resources to cover the high costs of developing digital money, such as training, technology development, and other operational costs.

Successful adoption of digital money in PICs will require developing digital technology, business models, use cases, and legal and regulatory compliance. The ecosystem that facilitates digital money adoption should be designed to be resilient. PICs should ensure that the underlying infrastructure is stable, available, secure, and accessible. Digital money service providers should be motivated to develop business models that generate sustained revenue and cover costs, and digital money must be widely used in various use cases, including by tourists which provide a large part of the income to many PICs. The legal and regulatory framework should be clear on the legal status of digital money, the obligations of relevant service providers, rights of users, and responsibilities of supervisory authorities and other competent authorities.

A cautious step-by-step approach would help PICs explore digital money effectively. The PIC authorities should clearly define the objectives behind the push for digital money, fully understand the implications, and plan for concrete experiments to comprehensively test assumptions and use cases. In order to prevent further CBR pressures, the authorities should set up proper frameworks and regulations to address potential

¹ In broad terms, correspondent banking refers to formal agreements or relationships between banks to provide payment services for each other. It is often used to conduct cross-border payments; as such, correspondent banking plays an important role in the international financial system.

financial stability risks arising from weak digital resilience and implement measures to mitigate effectively the existing ML/TF risks arising from traditional financial instruments and new ML/TF risks introduced by digital money. Given the substantial capacity gaps, capacity development will be crucial for digital money introduction and adoption in PICs.

Ultimately, digital money decisions for PICs also should depend on a variety of monetary and financial conditions, such as the existence or not of a national currency and the maturity of domestic payment systems. Countries with a national currency may eventually be able to introduce a central bank digital currency (CBDC), though this is unlikely in the short to medium term. The maturity of the banking and payment service providers (PSP) sectors may help indicate what type of digital money or specific design choices are the best fit for PICs. For example, a two-tier CBDC model may be best for the countries with national currency and a mature banking and PSP sector. On the other hand, foreign currency-based stablecoins could potentially be a realistic digital money alternative for those PICs with no national currencies, although it is crucially important for such stablecoins to be subject to robust regulation and supervision. Unbacked crypto assets, however, are not suitable as official currency and means of payments and therefore should not be supported by the official sectors.

A regional approach to introducing new forms of digital money and payments could help overcome capacity and scalability constraints. PICs could develop a regional approach to exploring digital money while managing the associated risks. Such a regional approach could entail interlinking traditional domestic payment systems, interlinking CBDCs once they are in place, and setting up or participating in multilateral digital payment platforms, regional networks, and collaboration and knowledge sharing, in particular with their main development partners. Further collaboration with international organizations, such as the IMF, provides opportunities to benefit from knowledge and experience sharing.

1. Introduction

The Pacific island countries (PICs) are a diverse set of countries in terms of size and development, yet nevertheless they are facing some common challenges. For example, payment-related challenges include low financial inclusion and inefficient and costly cross-border payments. Payment systems in the region face some similar obstacles to development partly due to small market size and remoteness. Risks to financial integrity have put further pressure on correspondent banking relationships (CBRs), leading to constraints on international financial transactions.

Policymakers in PICs are keen to leverage the opportunities brought by digital money to develop payment systems and promote financial inclusion (Davidovic and others 2019, Jahan and others 2022). Rapid advances in digital money are transforming the economic and financial landscape. Digital money offers wide-ranging opportunities by strengthening financial development and inclusion, and increasing efficiency. Payments will become easier, faster, cheaper, and more accessible, and they may cross borders more swiftly. But it also poses financial, technological, regulatory, and legal risks. The implications of digital money for PICs can be particularly wide-ranging and profound. Many PICs are now examining/experimenting various options of digital money and are at the critical stage of exploring how to leverage digital money to develop financial systems and promote financial inclusion. The IMF has provided some initial advice on digital money, as well as cautioning against premature policy responses on crypto assets (IMF 2021, 2023c, 2023d, 2023e, 2023f, Bains and others 2022).

This paper focuses on offering a broad framework for exploring the introduction of digital money in PICs. Mainly, it focuses on the following digital money forms: e-money, stablecoins, and central bank digital currency (CBDC)—as depicted in a digital money taxonomy provided in Box 1. Where relevant, it also discusses the use of (unbacked) crypto assets in PICs, but these are not considered “digital money” for the purpose of this paper. Moreover, the paper explores the potential benefits and risks and macro-financial implications of digital money. It also assesses the relevant decision factors (capacities and nature of the payments and financial sectors) and discusses the requirements needed to adopt digital money successfully (for example, digital technology, use cases, business models, and legal and regulatory compliance). The paper draws on key elements of recent IMF and Bank for International Settlements (BIS) work on financial inclusion, CBRs, and digital money, including CBDC.

This paper adds to the already existing literature discussing the benefits and perils of adopting digital money by specific countries or group of countries, specifically for PICs. The IMF, for example, has distilled lessons from six advanced CBDC projects, drawing on collaboration and exchanges with the respective central banks (Soderberg and others 2022).¹ The Asian Development Bank has analyzed the PICs to explore issues they need to address to realize the benefits of CBDCs in overcoming their physical remoteness and other challenges, and to expand financial inclusion (Didenko and Ross 2021). The virtual IMF Handbook on CBDCs (IMF 2023d, 2023e) aims to collect and share knowledge, lessons, empirical findings, and frameworks to address policymakers’ most frequently asked questions on CBDCs. This paper provides additional insights into macro-financial risks of adopting CBDCs and potential options for PICs.

The paper is divided into the following sections: the subsequent section describes the current state of financial development, the level of access to technology, and challenges in PICs. The third section presents potential benefits and risks of digital money for PICs. The fourth section outlines a digital money decision-making framework for PICs. The last section concludes by summarizing the findings and next steps for exploring digital money in PICs.

¹ The six central banks covered in the paper include the Central Bank of Bahamas (sand dollar), Bank of Canada, People’s Bank of China (e-CNY), Eastern Caribbean Central Bank (DCash), Sveriges Riksbank, (e-krona), and Banco Central de Uruguay (e-peso).

Box 1. Digital Money Taxonomy

Several forms of digital money have emerged or been explored with the advent of digitalization: electronic money (e-money), stablecoins, and CBDC being the three main categories. Crypto assets have also been adopted as legal tender to date by two countries (Central Africa Republic, El Salvador), although not fulfilling, or only partially fulfilling, the definition of “money.”

E-money is generally defined as electronically, including magnetically, stored monetary value as represented by a claim on the issuer.

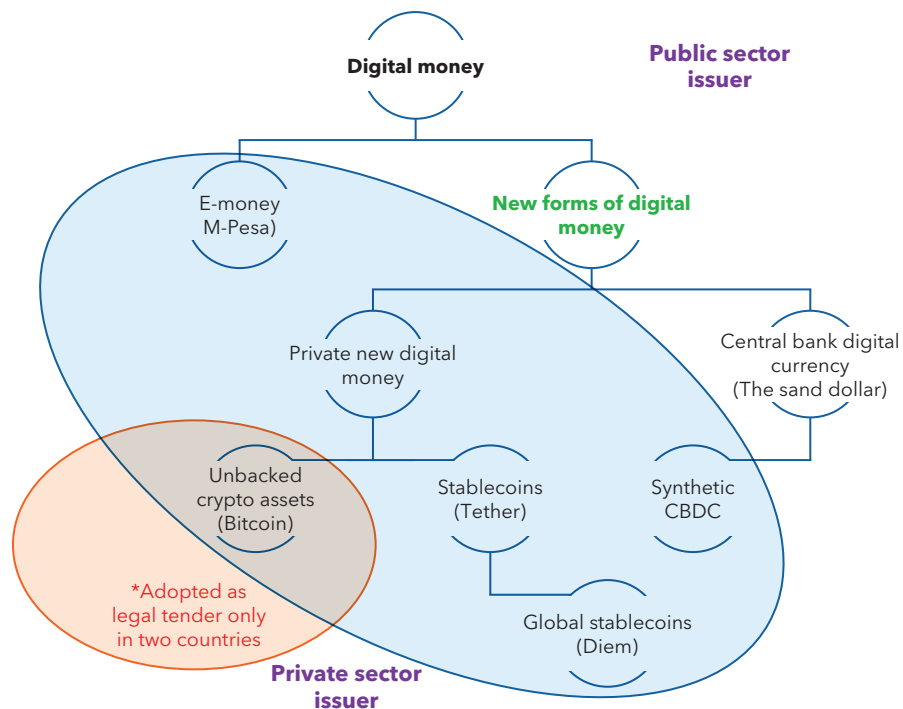
Crypto assets are a type of digital asset that depends primarily on cryptography and distributed ledger technology or similar technology. Unbacked crypto assets are crypto assets that are neither tokenized traditional assets nor stablecoins.

Stablecoins are crypto assets that aim to maintain a stable value relative to a specified asset or a pool or basket of assets.

CBDC is digital money issued by the central bank—in other words, a digital version of banknotes and coins. It can be used for retail or wholesale transaction purposes.

E-money, stablecoins, crypto assets, or CBDC can be transferred or exchanged through traditional payment systems (as “funds”), through decentralized ledgers, or through a series of correspondent banks. They could also be considered a payment system (due to their network nature, with participants settling transactions), a payment scheme (if rules and protocols are set for the transfers), or a payment end-user solution (provided they come with an integrated system of user access and transfer)—all in addition to being settlement assets in a transfer.

Box Figure 1.1. Digital Money Taxonomy



Source: IMF staff.

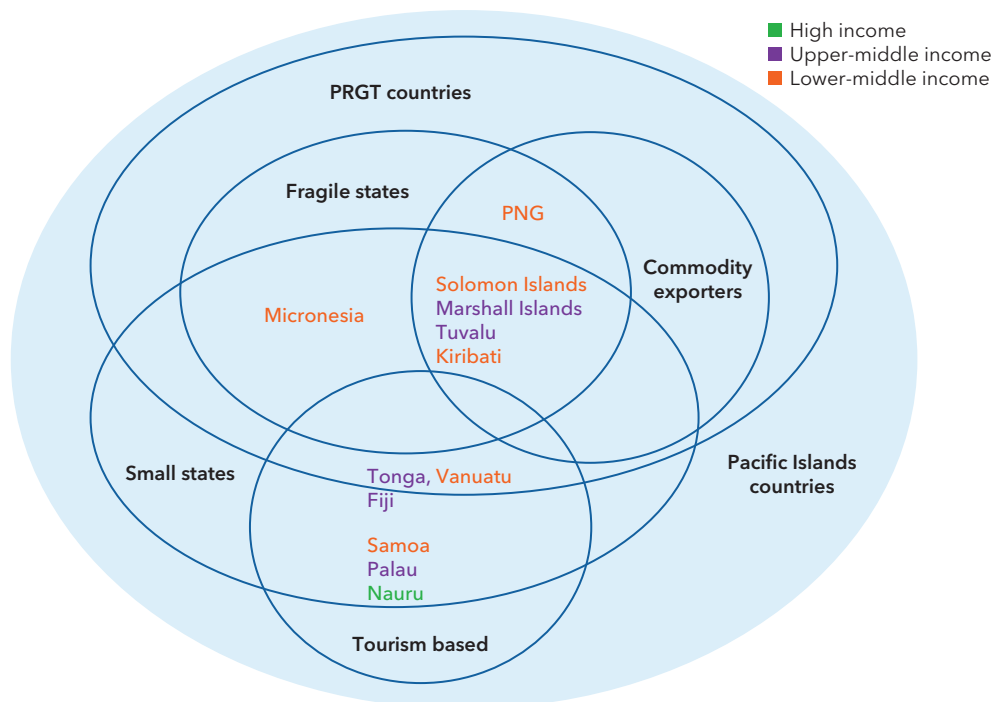
Note: CBDC = central bank digital currency.

2. Context

This section examines the macroeconomic and financial context of PICs. It looks at a wide range of macroeconomic and financial indicators, documents a lag/gap in financial inclusion in PICs compared to the rest of the world, and lays out significant challenges of maintaining CBRs. It also discusses challenges most PICs face that could be potentially addressed by digital money.

The PICs are a diverse set of countries as shown in Figure 1 and Table 1.² The 12 PICs are scattered over a vast area of the Pacific Ocean and differ greatly in size. They are generally island chains, with small and sometimes dispersed populations living mostly in rural areas and coastal communities, and frequently affected by adverse climate events or other natural disasters (Browne 2006). Papua New Guinea, with a total land area of 452,000 square kilometers (equal to around 87 percent of the region’s total land area), is the largest, followed by Solomon Islands with an area of 28,000 square kilometers. Other than Papua New Guinea, with close to 9 million people, the rest of the PICs have less than 1 million people, with Nauru, Palau, and Tuvalu having less than 20,000 people. By main source of income, about half of the PICs rely predominantly on tourism while the remainder are mainly commodity exporters (natural gas, timber, or fishery products). A significant inflow of money to some PICs comes in the form of external grants, remittances, as well as fishing rights schemes.³ In terms of per capita income, Palau and Nauru had a GDP per capita (in

Figure 1. Pacific Island Countries—A Diverse Group



Source: IMF staff.

Note: PNG = Papua New Guinea; PRGT = Poverty Reduction and Growth Trust.

² In this study, PICs refer to Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

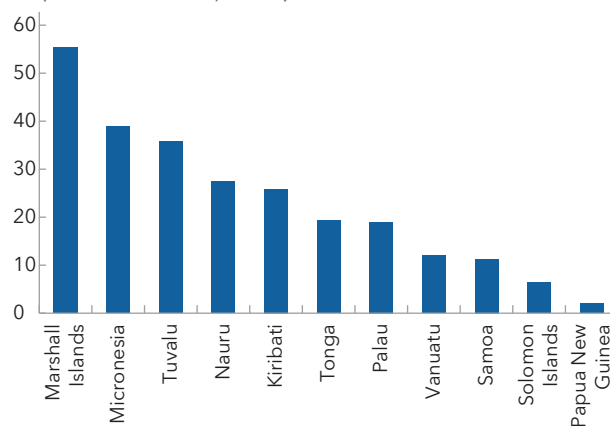
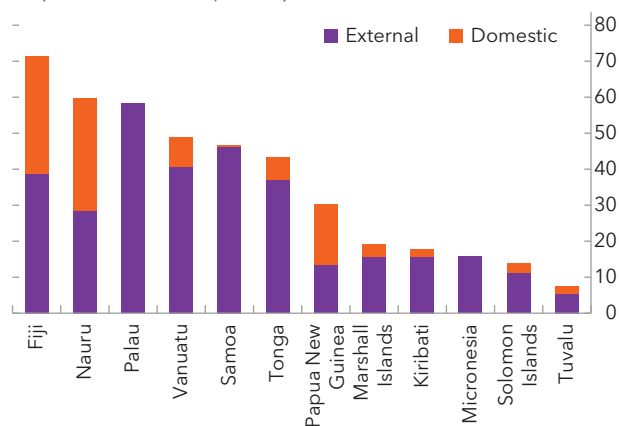
³ The fishing rights scheme, known as Vessel Day Scheme, is a scheme where vessel owners can purchase and trade days fishing at sea in places subject to the parties to the Nauru Agreement.

Table 1. The Pacific Island Countries: An Overview**1. Size of Economy in 2021**

Country	Nominal GDP (millions of US dollars, 2021)	Population (thousands, 2021)
Tuvalu	63	11
Nauru	133	13
Kiribati	207	122
Palau	218	18
Marshall Islands	257	55
Micronesia	407	105
Tonga	470	100
Samoa	844	200
Vanuatu	927	312
Solomon Islands	1,632	700
Fiji	4,296	905
Papua New Guinea	27,339	8,964
Pacific Islands Total	36,794	11,504
Pacific Islands excluding Papua New Guinea	9,455	2,540

2.

Country	Nominal GDP per capita (US dollars, 2021)	Human Development Index Rank (out of 189 countries, 2019)
Kiribati	1,706	134
Solomon Islands	2,333	151
Vanuatu	2,970	140
Papua New Guinea	3,050	155
Micronesia	3,880	136
Samoa	4,225	111
Marshall Islands	4,637	117
Tonga	4,701	104
Fiji	4,749	93
Tuvalu	5,834	...
Nauru	10,139	...
Palau	12,331	50

3. Pacific Islands : External Grants (Percent of GDP, 2021)**4. Pacific Islands: Composition of Public Debt (Percent of GDP, 2020)****5. Terrain of Pacific Island Countries**

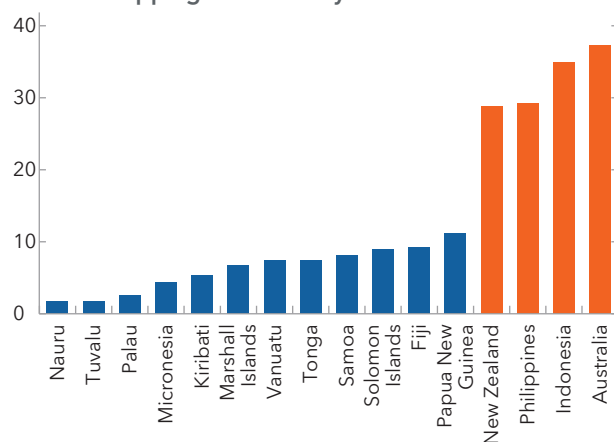
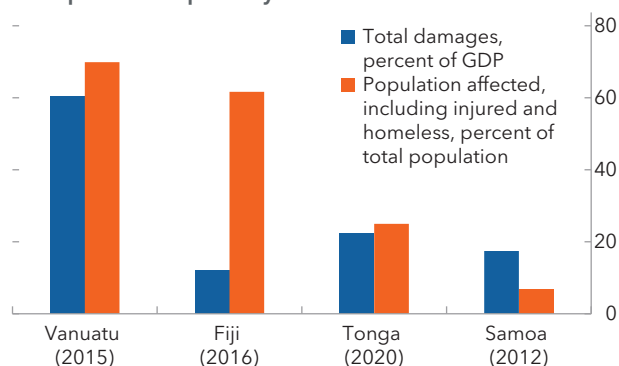
Country	Land area (sq. kms)	Arable land (as a percent of total land area)	Average sea distance between two habitants of the country ¹ (kms)	Maritime area - exclusive economic zone (sq. kms)
Tuvalu	26	..	177	751,672
Marshall Islands	200	11.1	280	1,992,022
Palau	500	0.7	14	604,253
Micronesia	700	2.9	706	2,992,415
Tonga	700	27.8	105	664,751
Kiribati	800	2.5	691	3,437,132
Samoa	2,800	11.5	19	131,535
Vanuatu	12,200	1.6	210	827,626
Fiji	18,300	9.0	71	1,281,703
Solomon Islands	28,000	0.7	267	1,596,464
Papua New Guinea	452,900	0.7	..	2,396,575

Table 1. The Pacific Island Countries: An Overview (Continued)**6. Geographical Remoteness**

Country	Distance to nearest continent (kms)
Samoa	3,800
Marshall Islands	3,500
Tuvalu	3,300
Kiribati	3,250
Tonga	3,200
Fiji	2,600
Micronesia	2,500
Solomon Islands	1,950
Vanuatu	1,800
Palau	1,463
Pacific Islands Avg.	2,736

7. Natural Disasters During 2012-22²

Country	Total number of natural disasters	Total number of related deaths
Papua New Guinea	23	324
Fiji	15	87
Solomon Islands	12	122
Tonga	10	5
Vanuatu	9	26
Marshall Islands	5	..
Palau	5	..
Samoa	4	95
Micronesia	3	5
Tuvalu	3	..
Kiribati	2	..
Pacific Islands Total	97	

8. Liner Shipping Connectivity Index³**9. Impact of Tropical Cyclones**

Sources: CRED/UCLouvain; Country desk data; EM-DAT, International Disaster database; Khor, Kronenberg, and Tumbarello 2016; Sea Around Us; World Bank, World Development Indicators; IMF 2022b; IMF, World Economic Outlook database; IMF, April ??? *World Economic Outlook*; and IMF staff calculations.

Note: kms = kilometers; sq. = square.

¹This is equivalent to computing average distance between islands of the country weighted by population.

²Includes tropical cyclone, flood, landslide, drought, epidemic, earthquake, and volcanic activity.

³A lower index value implies less connectivity to global shipping networks. Max. index value in 2004 = 100.

US dollars at current prices) above \$10,000 in 2021, while the GDP per capita in Kiribati, Solomon Islands, and Vanuatu was below \$3,000. Inter-island trade is relatively small, with the bulk of trade conducted with countries outside of the region (that is, Australia, China, Japan, and the United States).

PICs face common challenges in developing their economies and raising living standards. They are widely dispersed and remote to each other and major markets; lack economies of scale; have weak fundamentals, including limited natural resources; have low economic diversification; and have comparatively less developed infrastructure. They are particularly vulnerable to external shocks (for example, natural disasters and climate change). The costs associated with natural disasters are also disproportionately high in PICs given their small size (consistent with small developing states as a group), which has contributed to persistently low economic growth and limited policy space. The relatively narrow resource base and low capacity, together with increasing labor demand from more developed economies, also results in migration and “brain-drain.” While this may increase remittance flows, it does little to promote economic development. Taken together,

these factors have had a consistently deleterious effect on economic growth and have often led to a high degree of economic volatility while weighing on the countries' external competitiveness as well as on their ability to innovate, diversify, and grow.

The monetary landscape in the region is diverse. Six of the 12 PICs do not have a national currency, and instead use other countries' currencies for payments. Three countries covered under the Compact Agreement with the United States⁴—Marshall Islands, Micronesia, and Palau—use the US dollar, while Kiribati and Nauru use the Australian dollar. Tuvalu uses the Australian dollar for payments on a de facto basis and has never printed banknotes denominated in its national currency. With no central bank, these six countries do not have a publicly owned and operated national payment system and rely instead on either domestic commercial banks for transactions related to government bonds or subsidies, or on external financial market infrastructures (for example, provided by Australia and the United States).

The region also has large disparities in financial inclusion. PICs' remoteness, isolation, and population dispersion make the delivery of financial services expensive (Box 2). While Fiji is at the forefront of financial inclusion, many PICs are struggling to provide access to even basic financial services. Access to finance based on indicators such as access to an automated teller machine (ATM) or the formal banking sector remains generally low in the region. Both the number of commercial banks and their branches are limited. Most PICs rely on cash for retail payments, and the number of domestically issued debit cards eclipsed that of credit cards in most PICs. A few foreign non-bank payment service providers (PSPs) are operating in the region, while a small group of PICs have national payment systems to facilitate electronic fund transfers. Overall, adoption of technology-supported financial inclusion remains limited in the region, while some PICs have made significant progress on the use of mobile-based financial products (Samoa, Solomon Islands, Tonga).

Risks to financial integrity are perceived as high in some countries in the region. Several PICs have been identified by international bodies as exhibiting weaknesses which could threaten the integrity of their financial systems and present risks to the global financial system. For example, in 2016, the Financial Action Task Force (FATF)⁵ placed Papua New Guinea and Vanuatu on its list of jurisdictions with strategic anti-money laundering/combatting the financing of terrorism (AML/CFT) deficiencies (although both have since been removed from this list), and some PICs have been identified by the European Union as noncooperative jurisdictions for tax purposes. Financial integrity concerns also have arisen, among others, from policy choices (such as Marshall Islands' proposal to adopt a cryptocurrency as legal tender without the necessary mitigating measures and Vanuatu's economic citizenship program).

Many PICs face difficulty in maintaining CBRs.⁶ Countries in the region (except for Fiji and Papua New Guinea) are experiencing, to varying degrees, CBR pressures that have increased the costs and complexities in transferring money and sending remittances.⁷ Drivers behind CBR pressures vary and can include profitability (volume of transactions compared to cost of compliance), reputational concerns (for example, due to EU or FATF listing or general perceptions of lack of transparency), and AML/CFT weaknesses, among others. This trend has also incentivized some PICs to explore alternative options, including cross-border payment solutions offered by fintech firms.

⁴ The Compact of Free Association is an international agreement establishing and governing the relationships of free association between the United States and the three Pacific Island sovereign states of Marshall Islands, Micronesia, and Palau. Under the compact, the US federal government provides financial assistance and international defense responsibilities to the three countries.

⁵ The FATF is the intergovernmental body which sets the international standards on anti-money laundering, combating the financing of terrorism, and proliferation of weapons of mass destruction.

⁶ Alwazir and others 2017.

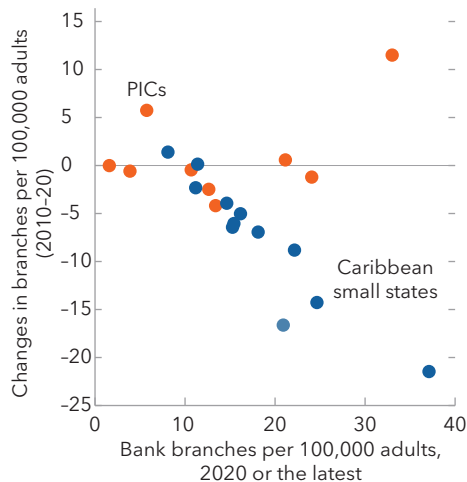
⁷ For example, currently, Nauru is unable to access correspondent banking transactions in US dollar, Euro, British Pound, and Fiji dollar through Bendigo Bank Australia (Republic of Nauru: 2023 Article IV Consultation Staff Report).

Box 2. Financial and Payment Landscape in Pacific Island Countries

The number of commercial banks in Pacific island countries (PICs) is limited. Kiribati and Nauru each have one Australian bank—ANZ in Kiribati and Bendigo Bank in Nauru—operating domestically, eliminating the need for a nationwide payment system. Marshall Islands, Micronesia, and Tuvalu each have two banks, although payments activity is concentrated usually in only one of them. Most of these banks' profits stem from cash management and foreign exchange activity, generated by large net inflows of funds. The rest of the PICs have four to five commercial banks, with Fiji having six banks.

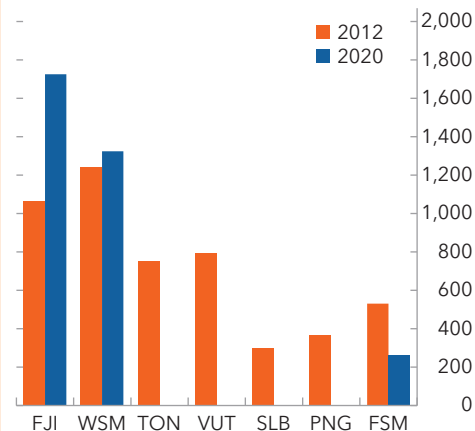
The number of bank branches in PICs has increased but is still low and on average lags those in Caribbean islands countries (Box Figure 2.1). For banking operations, typically, the population needs to go to a physical branch without the option of obtaining financial services through a digital branch and virtual process. The number of deposit accounts has increased in PICs but large divergence across countries remains (Box Figure 2.2.). For example, the ratio of adults to bank accounts in Fiji was 1 to 1.8 in 2020, while in Micronesia the ratio was about 1 to 0.37. In Fiji, 81 percent of adults had access to formal financial services, compared to 64 percent in 2014.

Box Figure 2.1. Bank Branches per 100,000 Adults and Changes
(Percent)



Sources: Financial Access Survey; and IMF staff calculations.
Note: Tonga's data is for 2018 and Kiribati's from 2011-13.

Box Figure 2.2. Number of Commercial Bank Deposit Accounts
(Per 1,000 adults)



Source: Financial Access Survey.
Note: Instead of 2012, 2014 for Vanuatu and 2015 for PNG. 2018 for Tonga. Data labels in the figure use International Organization for Standardization (ISO) country codes.

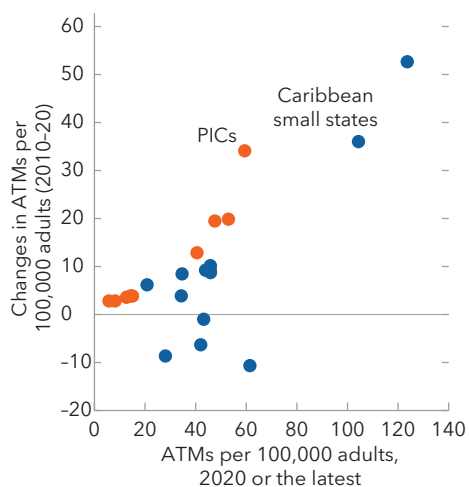
Some PICs have or are in the process of setting up national payment systems to facilitate electronic fund transfers. Papua New Guinea has one of the most sophisticated payment systems with two electronic systems—Kina Automated Transfer Systems which comprises a real-time gross settlement (RTGS) system, and a system settling direct credits and checks; and the Papua New Guinea National Switch for card payments and mobile payments. The Bank of Papua New Guinea has a plan to upgrade the national payment strategy to incorporate the latest developments in payments. Fiji has a real-time gross settlement (FIJICLEAR), which settles payments on the same day. The Fiji government passed the National Payment System Act in February 2021 and is in the process of modernizing Fiji's national payment system to meet the challenges from digitalization. For example, the Reserve Bank of Fiji (RBF) has implemented an upgraded real-time gross settlement system in

Box 2. (continued)

2022 with straight-through processing as well a new central securities depository. Recently, the RBF also implemented an Automated Clearing House for Electronic Funds Transfers and Instant Funds Transfers in November 2023 between its six commercial banks. Efforts are underway to include e-money issuers within the automated clearing house network by the end of 2024. Tonga launched a real-time National Payment System in late 2021 that includes a real-time gross settlement system, an automated clearing house, a digital check processor, and a central securities depository for government bond trading. Samoa, Solomon Islands, and Vanuatu, with help from the International Finance Corporation and the World Bank, are in the process of introducing digital payment systems that include RTGS, automated clearing houses, and central securities depositories.

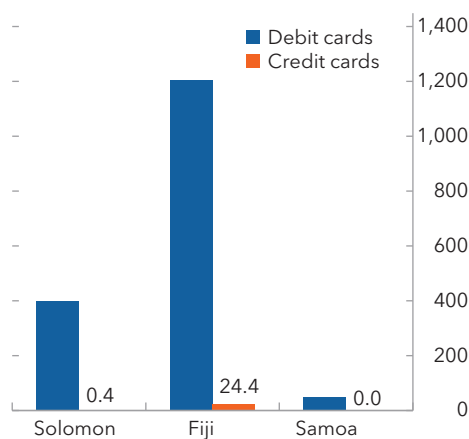
PICs rely on cash for most retail payments. The average ratio of cash in circulation to GDP in 2020 ranged from 2.6 percent in Papua New Guinea to 13.6 percent in Vanuatu. In the six PICs which do not use a national currency, the average ratio was 9.3 percent in 2020, slightly higher than the average of the Caribbean small islands at 8.7 percent. Since 2010, the average ratio for the PICs has increased more than the Caribbean countries. The number of ATMs in the PICs has increased but is still low and on average lagging those in the Caribbean countries (Box Figure 2.3.). The prevalence of credit and debit cards is also limited (Box Figure 2.4.)

Box Figure 2.3. ATM per 100,000 Adults and Changes
(Percent)



Sources: Financial Access Survey; and IMF staff calculations.
Note: Tonga's data is for 2018 and Kiribati's from 2011-13.

Box Figure 2.4. Number of Credit Cards and Debit Cards
(Per 1,000 adults)



Source: Financial Access Survey.

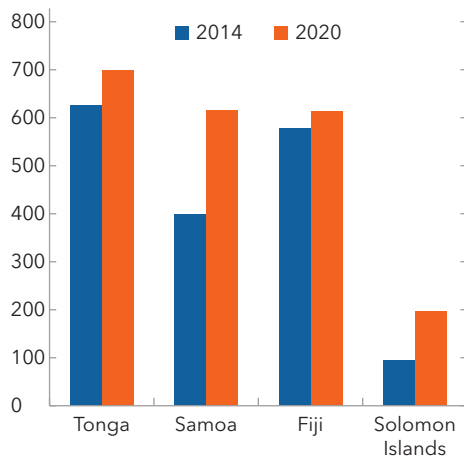
The value of mobile and online banking transactions remain limited (Box Figures 2.5. and 2.6.). For example, it was only 3.5 percent of GDP in Samoa in 2020. The outstanding balance of mobile and online banking accounts is also small. In Fiji, the balance was 4.5 percent of GDP in 2020, compared with the 68 percent of balance in the deposit accounts. However, the growth has been significant since, and catalyzed by, the COVID-19 pandemic. A total of Fiji Dollar (FJD) 3.3 billion over 5.7 million

Box 2. (continued)

transactions were made over internet banking during 2022, an increase of 45.0 percent and 17.0 percent respectively compared to the preceding year. The experience of Solomon Islands' saving scheme for informal workers, youSave LoMobile, however, embodies the progress and potential for advancing digital financial inclusion.

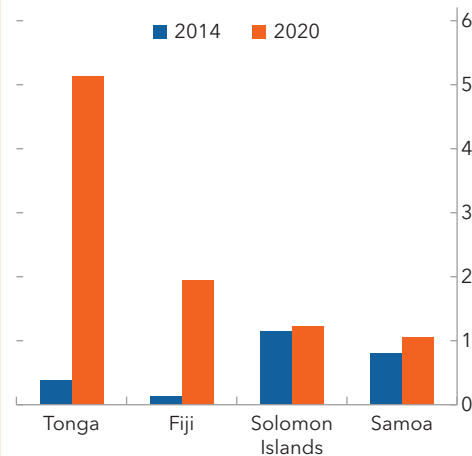
Several foreign payment systems and payment service providers are operating in the region. VISA's payment system encompasses most commercial banks in Fiji as both issuing and acquiring members. Mastercard is also an issuer in Fiji in conjunction with one E-money issuer (M-pAiSA) and working closely with other non-banks to expand card acceptance across smaller merchants for tourism. Kovina, as a regional merchant payment system provided by an Australian company, targets the tourism sector in the PICs. KlickEx, a regional money transfer operator headquartered in New Zealand, is active in Samoa and Tonga and is helping Tonga to develop its national card payment switch. UnionPay International, partnered with ANZ, and has launched UnionPay QuickPass, a "tap and go" payment solution for UnionPay cardholders operating in Fiji, Kiribati, Samoa, Solomon Islands, Tonga, and Vanuatu. In addition, several foreign online payment gateways have played an important role in remittance transfers in the region, such as KlickEx and XE Money Transfer.

Box Figure 2.5. Number of Registered Mobile Money Accounts
(Per 1,000 adults)



Source: Financial Access Survey.
Note: 2018 for Tonga.

Box Figure 2.6. Value of Mobile Money Transactions
(Percent of GDP)



Source: Financial Access Survey.
Note: 2018 for Tonga.

Digital infrastructure development in PICs is low and uneven. Access to infrastructure components such as electricity, wireless, cellular, and broadband technology in most countries in the region is lower than the world average (Table 2). Even where access is high, connections are expensive and unstable and are impacted by sporadic events (for example, in Tonga, volcanic eruptions caused an internet service outage for five weeks). Although submarine fiber optic cables to support high-speed internet access at a lower cost have been laid in the region, extension to "the last mile" to reach small and isolated communities is often incomplete. In addition, resilience of connections cannot be guaranteed as appropriate redundancy is yet to be developed.

Table 2. Pacific Island Countries: Digital Infrastructure

Country Name	Access to Electricity (percent)	Fixed Broadband Subscriptions (per 100 people)	Mobile Cellular Subscriptions (per 100 people)	Population Covered by at Least 3G (percent, 2020)	Population Covered by at Least 4G (percent, 2020)
Palau	100	NA	132.64	NA	NA
Fiji	100	2.57	110.6	96	80
Nauru	100	NA	92.39	98	30
Tonga	100	4.73	58.66	99	96
Samoa	100	0.85	52.00	91	49
Tuvalu	99.69	NA	76.32	48	0
Marshall Islands	99.16	1.69	27.03	NA	NA
Kiribati	91.96	0.15	45.76	72	53
Micronesia	82.93	5.22	19.13	15	0
Solomon Islands	73.35	0.15	69.01	45	25
Vanuatu	67.33	0.91	80.17	70	70
Papua New Guinea	60.40	0.23	53.85	64	50
World Average	90.52	15.89	106.15		
Asia Pacific Average				96	94

Sources: Authority databases (for example, census information); and World Bank, World Development Indicators database.

Note: The table columns are color coded individually, from red representing lower levels of development to green, reflecting a more mature posture. NA = not applicable.

A. Pacific Island Country Challenges that Could Be Potentially Addressed by Digital Money

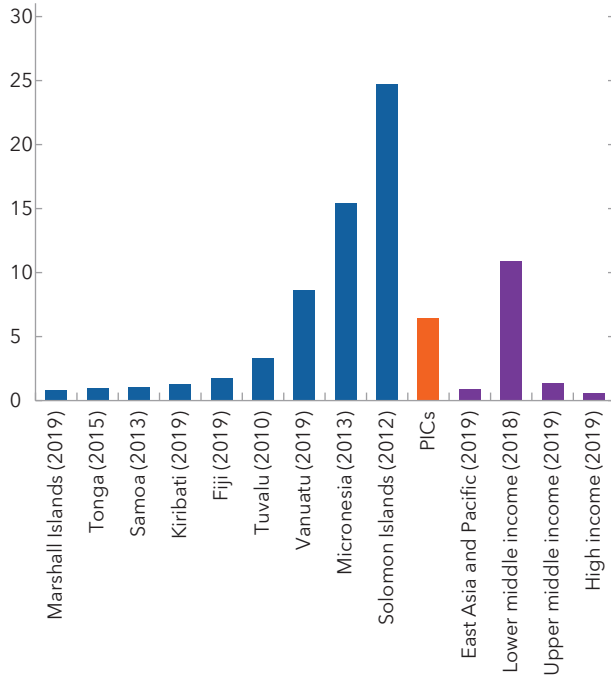
Limited and unequal access to financial services contributes to poverty and inequality. While some PICs have made progress toward the Sustainable Development Goals to combat extreme poverty, poverty rates among PICs are higher than the East Asia and Pacific average (Figure 2, panel 1).⁸ In particular, Micronesia, Papua New Guinea, and Solomon Islands have the highest poverty rates among PICs. In addition, income inequality among PICs is on average higher than that of other East Asia and Pacific countries (Figure 2, panel 2), with Micronesia, Papua New Guinea, and Tuvalu recording the highest income inequality. Such persistent poverty and high inequality make PICs vulnerable to economic and climate shocks. Bottlenecks to growth, high exposure to shocks (leading to income volatility), inadequate health and education services, limited access to financial services, and unequal access to traditional support for the vulnerable all contribute to poverty, income inequality, and weaker climate resilience in PICs. In particular, the share of the population that is excluded from formal financial services for PICs is significantly higher than that of Asian and middle-income peers, and the unbanked population is also concentrated amongst the poorest population (Figure 3).

⁸ Poverty rate is measured as percentage of population living on less than \$1.90 a day.

Figure 2. Poverty and Income Inequality

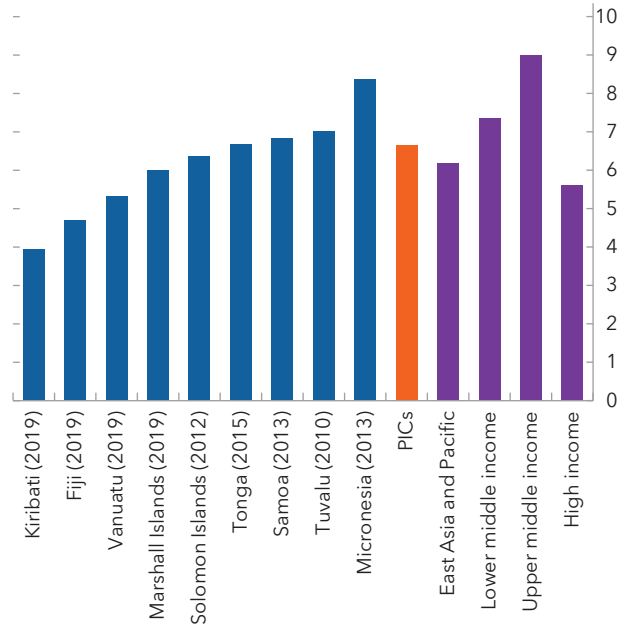
1. Poverty Rate

(Percentage of the population living on less than \$1.90 a day at 2011 international prices)



2. Income Inequality

(Share of top 20 percent to bottom 20 percent income)



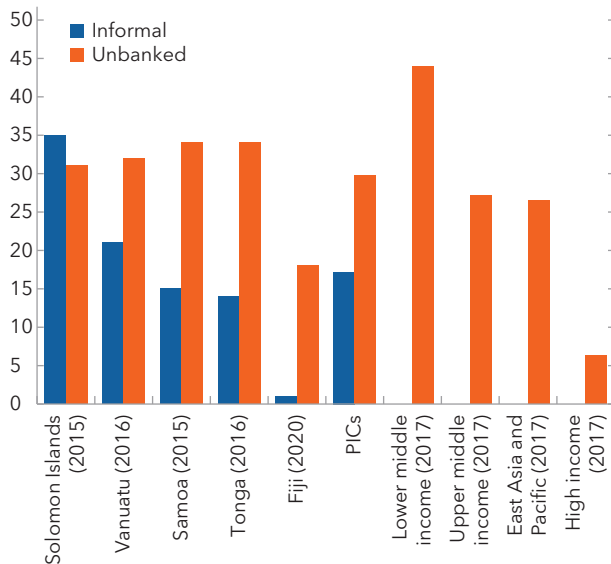
Source: World Bank, World Development Indicator database.

Note: In panel 1, PICs' value is an unweighted average of individual PICs shown in the figure. In panel 2, values for PICs, East Asia and Pacific, and income categories are unweighted averages of individual country values. PICs = Pacific island countries.

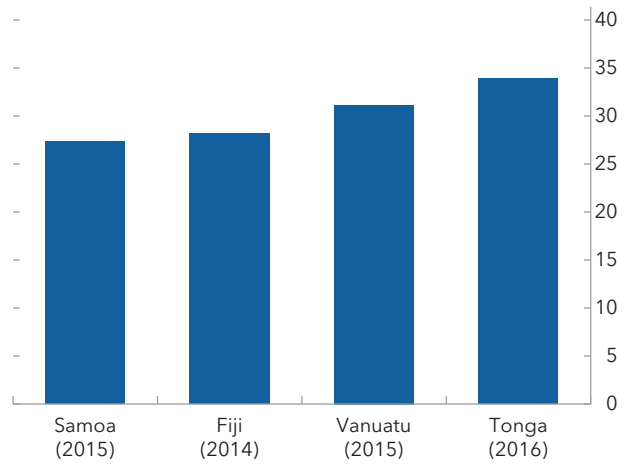
Figure 3. Unbanked Population in Pacific Island Countries

1. Share of Adults Using Informal Financial Institutions or Without a Bank Account

(Percent)



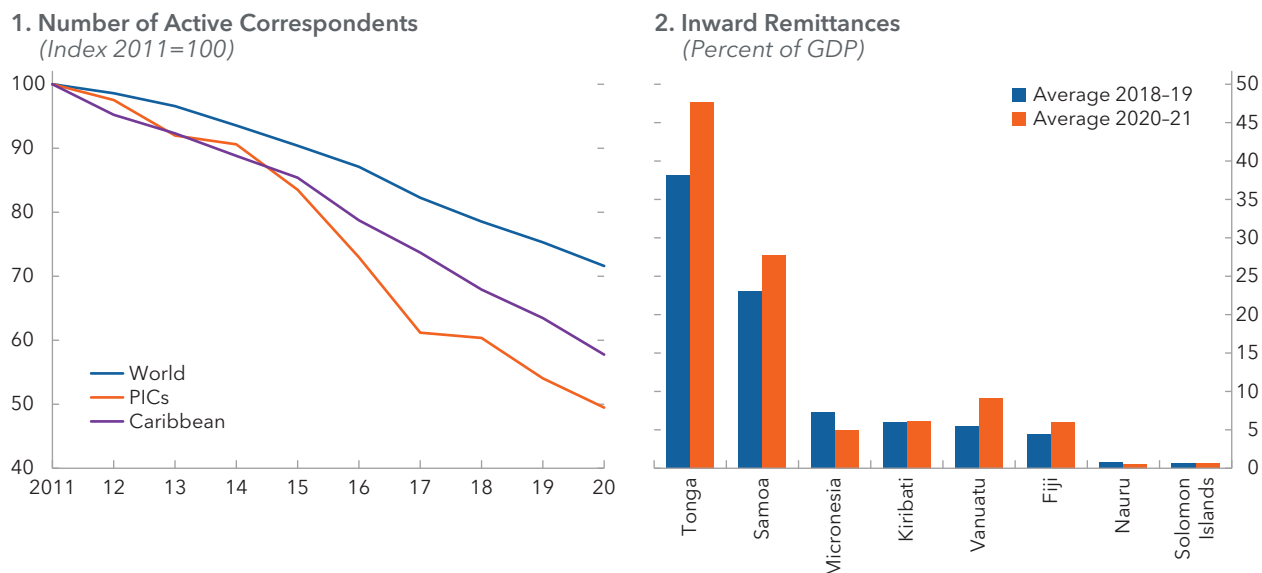
2. Share of Unbanked Population in the Lowest Quintile of Income Distribution



Sources: Financial Services Demand Side Survey; and Findex database.

Note: PICs = Pacific island countries.

Figure 4. Pacific Island Countries: Inward Remittances and Number of Active Correspondent Banking Relationships



Sources: Bank for International Settlements; IMF, World Economic Outlook database; IMF staff calculations; and IMF staff estimates.
Note: PICs = Pacific island countries.

As highlighted during the COVID-19 pandemic, structural barriers in payment systems can hinder the delivery of government support. Among the world's most remote and geographically dispersed countries in the world, PICs face significant challenges to promptly distribute fiscal support to the most needed and eligible population. Many PICs opted for physical cash transfers and in-person interactions due to limited access to banking services and low mobile and internet penetration. Absence of a national identification system to identify eligible and targeted populations has also constrained the government's ability to deliver fiscal support where it is needed most.

Ongoing losses of CBRs threaten to cut the access of PICs to international finance—including the remittances upon which many PICs are highly dependent (Figure 4). Remittances are a major source of income for several PICs and are highest in Tonga (equivalent to nearly 47 percent of GDP). Remittances are critical to household income and consumption in several PICs, especially for those not employed in the public sector. The resilience of remittances was one of the main factors sustaining private consumption during the COVID-19 pandemic (Doan and Petrou 2022). However, CBRs have been under pressure globally for the past decade, as banks reassess the risks versus related profitability.⁹ CBRs in PICs have declined significantly more than in most other regions and are continuing to fall. This is leading to a rising concentration of remaining CBRs in just a few institutions, an increase in remittance costs, and lower speed of transactions; this ultimately puts some PICs at risk of a complete loss of CBRs.

Policymakers in PICs are exploring digital money and crypto assets to address these challenges. Notable developments include the following:

⁹ Banks' decisions to withdraw CBRs are driven by several factors, including cost-benefit analysis, reevaluation of business models amid an evolving regulatory and enforcement landscape with regard to prudential requirements, policies on AML/CFT, and tax transparency (Erbenová and others 2016).

- Marshall Islands has been an early starter in the region in exploring crypto assets. It passed legislation in early 2018 for adopting a private crypto asset (SOV) as the second legal tender. However, substantial concerns over macroeconomic, financial stability, and financial integrity risks from the introduction of the SOV put implementation on hold.¹⁰
- Fiji has the fastest adoption of crypto assets in the world (according to Chainalysis statistics and Jahan and others, 2022).
- Vanuatu amended its Financial Dealers Licensing Act in July 2021, reversing a previous ban on crypto assets and making it the first country in the Pacific, and one of the few in the world, to legalize a broad set of crypto asset activities.
- Palau, under a partnership with US-based crypto company Ripple, is exploring plans to launch a sovereign stablecoin.
- Marshall Islands authorities are currently conducting a feasibility study jointly with a European firm, Criteo SA, on developing a national digital payment system using a US dollar-backed stablecoin.
- In the meantime, fintech firms Soramitsu (sponsored by the Japanese government as part of its partnership with the PIC) and R3 has been conducting feasibility studies on introducing CBDCs in Fiji, Solomon Islands, Tonga, and Vanuatu.¹¹

¹⁰ Marshall Islands has also become the first country in the world to formally recognize decentralized autonomous organizations, which are collectively owned, blockchain-governed organizations working toward a shared mission.

¹¹ SORAMITSU. 2022. "SORAMITSU to Lead Feasibility Study on Digital Currency in Oceania." <https://soramitsu.co.jp/digital-currency-oceania>.

3. Benefits and Risks of Digital Money for Pacific Island Countries

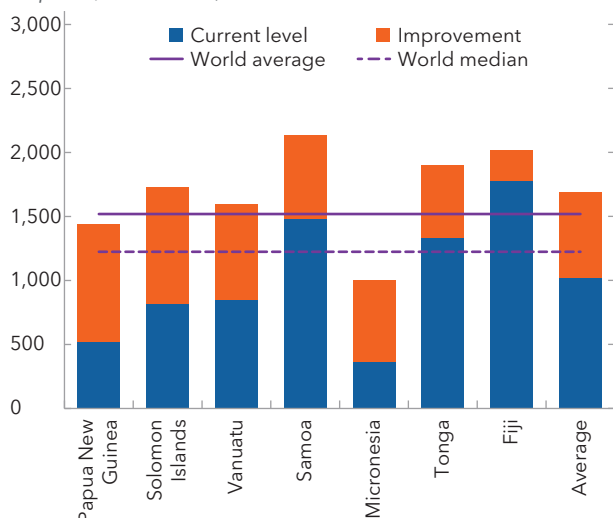
A. Potential Benefits

Digital money offers wide-ranging opportunities, which PICs are keen to foster to address long-standing challenges of financial inclusion and cross-border payments. It has the potential to reduce transaction costs, increase efficiency (including offsetting remoteness), improve government support, broaden access to financial services in PICs (especially for underserved populations), and facilitate international payments and remittances. The section also shows evidence of a positive effect of digital technology on financial inclusion in the region.

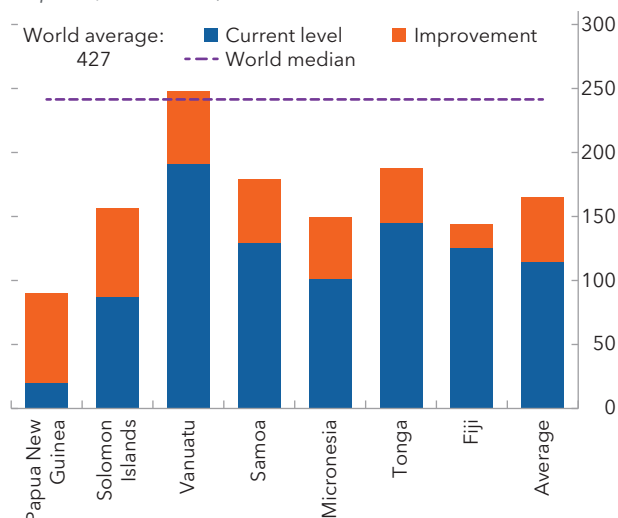
Digital technology could improve financial inclusion. Digital money as well as the associated payment systems have great potential to help expand financial inclusion to those underserved at lower financial transaction costs with easier access (UNCDF 2021). Figure 5 shows the role of digital technology such as the internet in improving access to financial products in PICs, based on a scenario analysis (see details of the analysis in Annex 1, which also covers access to mobile phones in addition to internet). The scenario analysis assumes digital technology access in PICs would rise from current levels to a level equivalent to among the top tier of the upper-middle-income country group, such as Malaysia and other East Asian peers. The results show that both deposit and loan accounts could increase significantly with improved internet access, on average for PICs, from 1,021 and 114 to 1,700 and 165, respectively. Among PICs, Micronesia and Papua New Guinea would be among the top gainers from improved internet access that enhances financial inclusion. Similar results are found also based on data on access to mobile phones (not displayed in Figure 5).

Figure 5. Digital Technology and Financial Inclusion

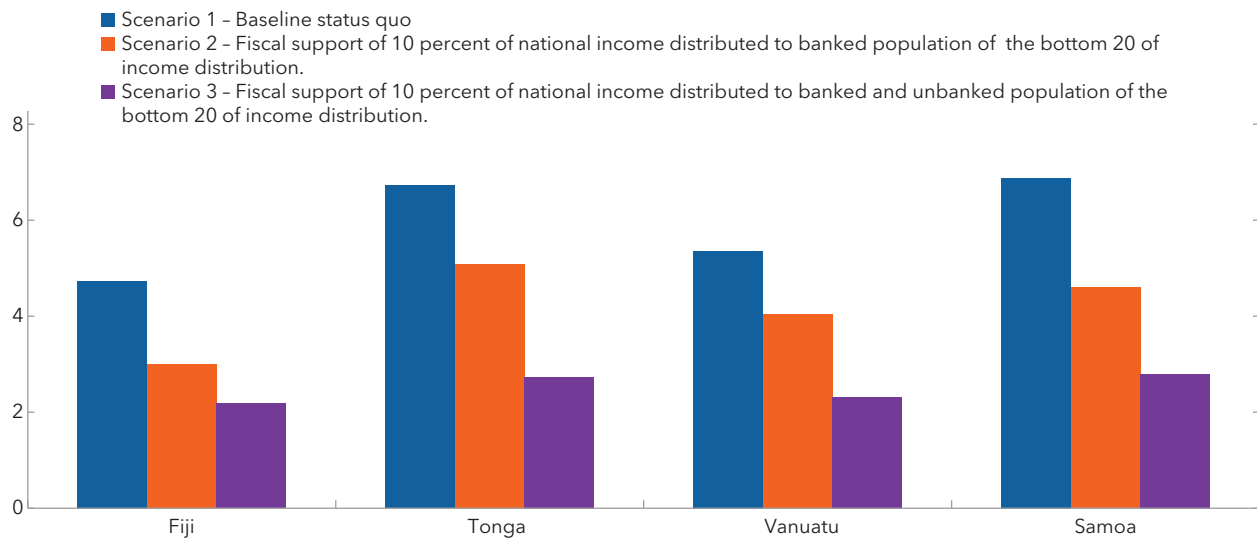
1. Deposit Accounts When Internet Access Improves
(Number of deposit accounts with commercial banks per 1,000 adults)



2. Loan Accounts When Internet Access Improves
(Number of loan accounts with commercial banks per 1,000 adults)



Sources: World Bank, World Development Indicators database; and IMF staff estimates.

Figure 6. Income Distribution Outcomes with Digital Money**Income Quintile Ratios under Different Scenarios***(Ratio of Top 20 to Bottom 20 Income)*

Source: IMF staff estimates.

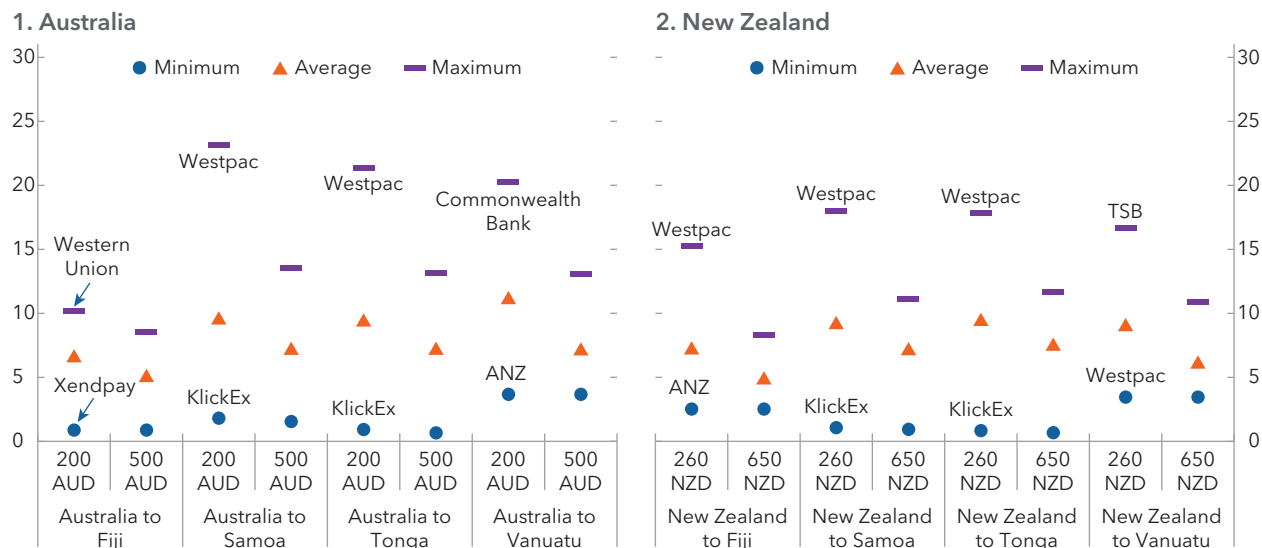
Digital money could help improve the efficiency of government support and reduce leakages. With enhanced technology, individuals and businesses are no longer restricted by physical presence to receive digital money from governments; hence, geographical barriers can be overcome, and high transaction costs would be reduced significantly. Digital money based on more advanced technologies can facilitate the beneficiary enrollment and due diligence needed to better target the vulnerable population, and it could potentially help restrict the inappropriate use of fiscal support (for example, through a smart contract design). To illustrate, a scenario analysis assumes government support of about 10 percent of national income be distributed through digital money targeting the poorest 20 percent of the population, including those previously unbanked (see details of the analysis in Annex 2). The analysis finds digital money would significantly reduce income inequality by more than half of the last observed level for a number of PICs (Figure 6). Better financial inclusion and government support can also help reduce costs associated with natural disasters, which are becoming more intense and frequent in this region.

Digital money could help reduce remittance costs. The remittance cost is significantly higher in PICs than in Caribbean and Central American countries (Stuart and others 2019). Evidence shows the cost advantage of some nonbank transfer channels in some of the PICs (Figure 7). The average costs from some corridors range from 5 percent to 11 percent of the transaction value, with Fiji having the lowest costs among the four countries (Fiji, Samoa, Tonga, Vanuatu) where such data are available. The costs vary greatly among different types of channels, ranging from less than 1 percent to 20 percent. For instance, Xendpay (available in Fiji) and KlickEx (available in Samoa and Tonga) have the lowest costs, while Western Union and Westpac often charge higher prices (though Westpac charges the least in transferring money from New Zealand to Vanuatu).

The cost advantage of the nonbank transfer channels greatly promote their popularity in remittance (Hahm, Subhanij, and Almeida 2019). For example, in Fiji, remittance flows through mobile operators increased substantially from nearly zero in 2015 to around 20 percent in the first quarter of 2021 at the expense of transfers via banks and money transfer operators. In Samoa, the share of remittance flows via nonbanks, including mobile money transfer operators, increased continuously to 90 percent in the first quarter of 2021 from around 80 percent in 2019.

Figure 7. Total Cost of the Remittance Transaction, from Australia and New Zealand to Pacific Island Countries

(Percent of transaction value, as of March 2021)



Source: World Bank, Remittance Prices Worldwide database.

Digital money may have some advantages that could mitigate the adverse impacts of CBR withdrawals. Digital money, such as CBDCs or related digital platforms, could help to achieve cheaper, faster, and more transparent and accessible cross-border payments, if transaction counterpart countries also adopt interoperable infrastructures. For example, CBDCs could create the opportunity to start with a “clean slate” designed based on common standards which can shorten cross-border transaction chains, simplify processes, and address current frictions in cross-border funding arrangements. CBDCs can also increase payment diversity, thereby stimulating competition and transparency in a cross-border context. However, many digital money applications may actually increase the risks of the loss of CBRs, as explained in the following, and therefore they should be carefully considered. Moreover, many fintech payment solutions still need to rely to some degree on existing banking infrastructure for clearing and settlement of funds, so they are not fully immune to CBR withdrawals.

B. Potential Risks

Given its different forms, digital money—and the design of the infrastructure that settles related transactions—can carry significant risks. On the one hand, there are macroeconomic risks that arise mostly due to exogenous factors, such as the specific country context, the stability of its national currency, institutions, etc. On the other hand, there are risks that are specific to the type of digital money concerned and specific operational models. Appropriate design choices and regulation, which the competent authorities (such as the central bank or a ministry of finance) can control or influence, can mitigate both types of risks to some extent. These choices are, however, not always sufficient for mitigating macroeconomic risks. This type of risk is most relevant for smaller countries with limited capacity, such as the PICs.

Macroeconomic Risks

Introducing stablecoins and crypto assets as currencies could increase macroeconomic risks if not adequately regulated. Half of the PICs do not have a national currency and are relying instead on Australian or US dollars, and the population in some PICs already uses crypto assets. Crypto assets in particular (but also some types of stablecoins) are poor substitutes for means of payment, and they carry additional macroeconomic risks compared to other forms of digital money (for example, risks to the effectiveness of monetary policy, fiscal

risks, risks to financial stability, financial integrity, etc.). Moreover, some PICs are more prone to currency substitution by crypto assets and stablecoins due to weak confidence in their domestic monetary systems and the absence of other publicly supported digital assets such as CBDCs (as highlighted in IMF 2022a). Introducing stablecoins and crypto assets without adequate regulation and proper governance may also compromise the PICs' capability to monitor and manage financial flows, with possibly undesirable effects on capital flows and illicit financial flows (He and others 2022).¹²

Introducing digital money may cause banking disintermediation. The banking sector in the PICs is very shallow (five PICs rely on one or two commercial banks only). Introducing digital money with inappropriate designs or a temporary operational issue at one bank in these PICs may cause banking disintermediation and loss of deposits by private banks, which would put pressure on bank profits (with already limited presence in the region) and restrict credit supply to the economy. Finally, reducing the demand for banking services through digital money could reduce the attractiveness of a bank providing them in these small markets.

The lack of resources and capacity, as well as the absence of monetary authorities in some PICs, makes digital money systems more prone to operational risks. For example, many PICs lack capacity and resources to effectively manage operational risks arising from digitization, particularly cyber risks which require close monitoring (for example, a 24/7 security operations center for perimeter compromise detection, behavioral monitoring to detect insider threats, etc.) and effective incident response and recovery. Monitoring and incident management capabilities are necessary for digital resilience and should ideally be in place prior to issuing digital money to engender and maintain consumer confidence. Sovereign stablecoins issued by some PICs with no central bank may lack oversight, or the oversight may be conducted by institutions unfit for purpose (for example, a ministry of finance or a banking association). Moreover, faster than expected adoption may lead to quick emergence of a systemically important digital money system; without an adequate oversight framework and related resources, an operational disruption on such a system may have severe financial stability impact.

Specific Risks to the Type, Operational, and Organizational Model of Digital Money

Other critical risks may arise with the introduction of digital money for the PICs:

- *Risks to financial integrity:* According to assessments by the Asia/Pacific Group on Money Laundering, a FATF-style regional body, most PICs have significant shortcomings in their AML/CFT regimes, both in terms of framework and implementation. Capacity constraints have also led to challenges in AML/CFT supervision and mitigation of risks to financial integrity. AML/CFT weaknesses have been one source of CBR fragility among PICs. The situation could be exacerbated by the introduction of new products and services. Law enforcement in PICs may not have the capacity to investigate and prosecute criminal cases involving new technologies.
- *Governance risk:* Introduction of digital money should be accompanied by effective governance arrangements. For instance, during the project stage, unclear roles (for example, who represents the project or program manager), responsibilities (for example, testing), and contractual arrangements with technology service providers (distributed ledger technology, for example) could lead to undetected design faults and gaps in technical functionalities. Equally, gaps in "ecosystem" oversight could lead to undetected operational vulnerabilities and increase exposure to digital risks.
- *Legal and regulatory risk:* Most PICs lack an adequate legal framework on the status, issuance, and use/circulation of publicly issued digital money or state-/government-backed stablecoins (for example, no power to issue, or a law that is unclear whether money issued in digital form is legal tender). In other cases,

¹² An overview of effective regulation of crypto assets is provided in IMF (2023c) and FSB (2022a).

in relation to privately issued digital money, laws and regulations either do not exist on digital services and PSPs providing such services or it is unclear how these laws and regulations would apply to some new forms of digital money. Once new forms of public and private digital money are issued, the lack of clarity on the regulatory oversight of the related payment systems or schemes and its participants could contribute to certain risks not being monitored and/or addressed. For this reason, PICs considering the introduction of new forms of currently unregulated digital money should be guided in setting relevant regulatory requirements by international standards.

- *Technology risk*: Excessive reliance on technology vendors and an unstructured approach to the various stages of project management may lead to poorly informed decisions regarding the design, issuance, and redemption of digital money. Missing important steps in the project lifecycle (for example, adequate testing and stress testing of plausible scenarios) for either lack of or desire to minimize resources and cost, or excessive trust in the technology vendor's prior successes with similar projects, could lead to risk-prone solutions and vendor lock-in. Inadequate governance and internal controls or resource capacity to effectively operate a digital money system, internally or vendor delivered (for example, a stablecoin designed by a private company), could result in service outages and breaches, erosion of consumer confidence and trust, low adoption rates, and ultimately financial stability risks.¹³
- *Adoption risk*: The lack of digital/financial literacy among the population in some PICs may lead to unintended adoption levels (too high or insufficient) with negative consequences either way. Also, given the high reliance on tourism in PICs, a digital money solution inaccessible to tourists would have limited adoption and low profitability (particularly in PICs with less than 20,000 people). Finally, service outage of new digital money systems could lead to loss of confidence in a digital payment instrument, with an impact on digital money adoption.
- *Risks to consumer protection*: New forms of digital money may be prone to payment fraud, or they may lack transparency related to, for instance, use, fees, and stability. In particular, it is important that risk-proportionate consumer protection requirements are set for digital money payment instruments and related transactions. However, some PICs may not have strong consumer protection authorities or a consumer protection explicit mandate in the statute of their authorities.

¹³ For example, see FSB (2022b) for recommendations for crypto asset regulations.

4. Digital Money: A Decision-Making Framework for Pacific Island Countries

A. Decision Factors

This section, divided by three subsections, offers a framework for exploring policy responses to digital money that deal with domestic needs, cross-border needs, or both, and assessing the feasibility of each type of digital money by considering economic characteristics, capacities, and nature of the payments and financial sectors.

Introducing digital money requires consideration of both domestic and cross-border perspectives. First, the challenges that PICs share for either domestic or cross-border payments should be well identified (the most important ones were mentioned in the section titled “Context”). Second, *some common economic characteristics* are particularly relevant for a sustainable introduction of digital money (Table 3). Third, whether the *PICs transact with each other and/or with other important partners* may determine what model of cross-border payments would work best for this group of countries, or the broader Asia and Pacific region.

A Domestic Perspective

Successful public-private partnership in digital infrastructure and services investment helps achieve economies of scale. Digital infrastructure and services require investment by both private and public sectors to various degrees depending on the type of infrastructure. Investment and cost recovery in digital infrastructure and services depend on scale: volumes and/or values of transactions. Hence, *population* and *GDP per capita* (Table 3) are relevant economic proxies to analyze, equating to the potential of profit generation/cost recovery based on either volumes (correlated to population) or average transaction values (correlated to levels of GDP per capita). Countries with very low populations (like Nauru, Palau, and Tuvalu) or very low GDP per capita (like Kiribati, Papua New Guinea, and Solomon Islands) might therefore face challenges to introducing new forms of digital money with a sustainable cost recovery model.

Countries with a national currency may be able to introduce a CBDC in the medium term. Half of the PICs do not have a national currency (Table 3), and hence cannot issue a CBDC. Among the remaining half, only a few (Fiji, Solomon Islands, Vanuatu) are exploring the feasibility of a CBDC, though it is unlikely that they will issue one in the short to medium term¹⁴ (for example, Fiji prefers to first learn from other countries’ experience with CBDC issuance before advancing its CBDC exploration).

The maturity of the banking and PSP sectors may help indicate what type of digital money or specific design choices are the best fit for PICs. On one hand, a two-tier CBDC model may be best for the countries with national currency and a mature banking and PSP sector with ideally more than two to three retail banks and PSPs (to avoid a monopolistic end-user provision of CBDC), such as Fiji, Papua New Guinea, Solomon Islands, and Vanuatu. On the other hand, a foreign currency-based stablecoin is potentially the most realistic digital money alternative for those PICs with no national currencies, few retail banks and PSPs, and low prospects of more such entities entering the market.

¹⁴ For those PICs considering to issue CBDC, the IMF’s CBDC virtual handbook can help guiding exploration and decisions (IMF 2023d).

Table 3. Economic Characteristics Relevant to Digital Money Exploration

Country Name	Population (thousands, 2021)	GDP per capita (current prices, USD, 2021)	Currency	Banks
Papua New Guinea	8,964	3,004.99	Y	4
Fiji	905	5,147.19	Y	6
Solomon Islands	700	2,303.01	Y	4
Vanuatu	312	3,045.43	Y	5
Samoa	205	3,947.20	Y	4
Kiribati	122	1,705.81	N	1
Micronesia	105	3,880.49	N	2
Tonga	100	5,002.50	Y	4
Marshall Islands	55	4,463.23	N	2
Palau	18	12,187.16	N	5
Nauru	13	10,139.07	N	1
Tuvalu	11	5,833.98	N	2

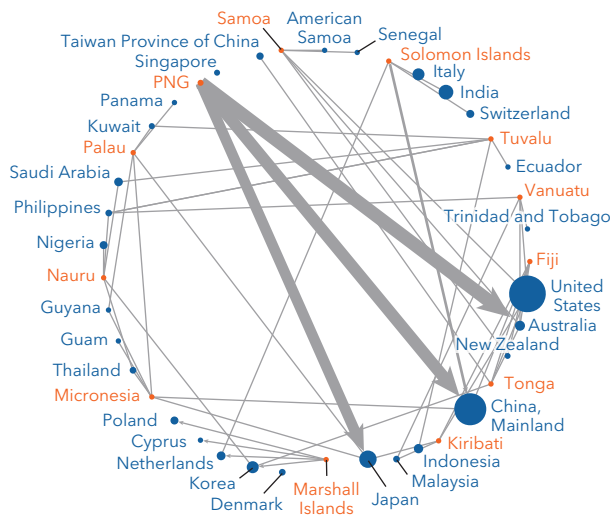
Source: IMF staff calculations based on World Bank data and a dedicated fact-finding.

A Cross-Border Perspective

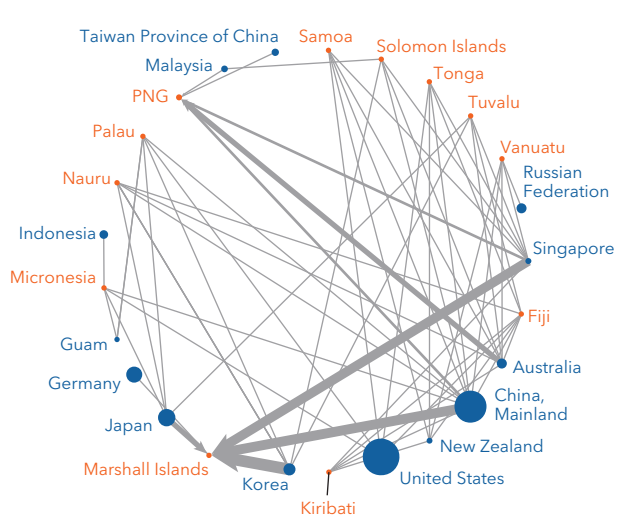
The way PICs transact with each other (intraregion) and with major trading partners outside the region could determine what digital money model best caters for their cross-border needs. Some PICs have a very large number of trading partners (for example, Fiji and Papua New Guinea traded with 137 and 115 countries in 2021, respectively), while some have only a few (for example, Nauru and Tuvalu traded with 40 and 36 countries, respectively, in 2021). Volume of trade flows also vary significantly (ranging from billions to a couple million US dollars), reflecting the diverse economies in the region. Generally, PICs transact very little with each other (see a simplified version of the trade flows in Figure 8), but Fiji, playing a major role as a re-exporter, is among the top 10 trading partners for six PICs. It also has the most developed financial sector among PICs. A potential regional solution may usefully leverage Fiji’s position, its experience, and

Figure 8. Network of Pacific Island Countries’ Exporters and Importers

1. Top Five Exporters



2. Top Five Importers

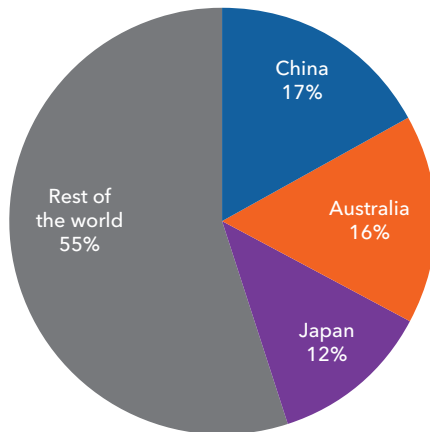


Source: IMF staff calculations based on IMF Direction of Trade Statistics database.

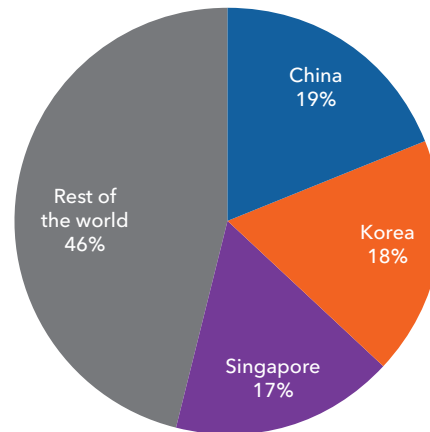
Note: Width of arrows is based on average value of export and import from 2017 to 2021. Size of the county dots is based on 2021 nominal GDP. PNG = Papua New Guinea.

Figure 9. Top Five Export and Import Partners of Pacific Island Countries
(Percent of total)

1. Export Partners



2. Import Partners



Source: IMF staff calculation based on export and import values during the period of 2017 to 2021 from the Direction of Trade Statistics database.

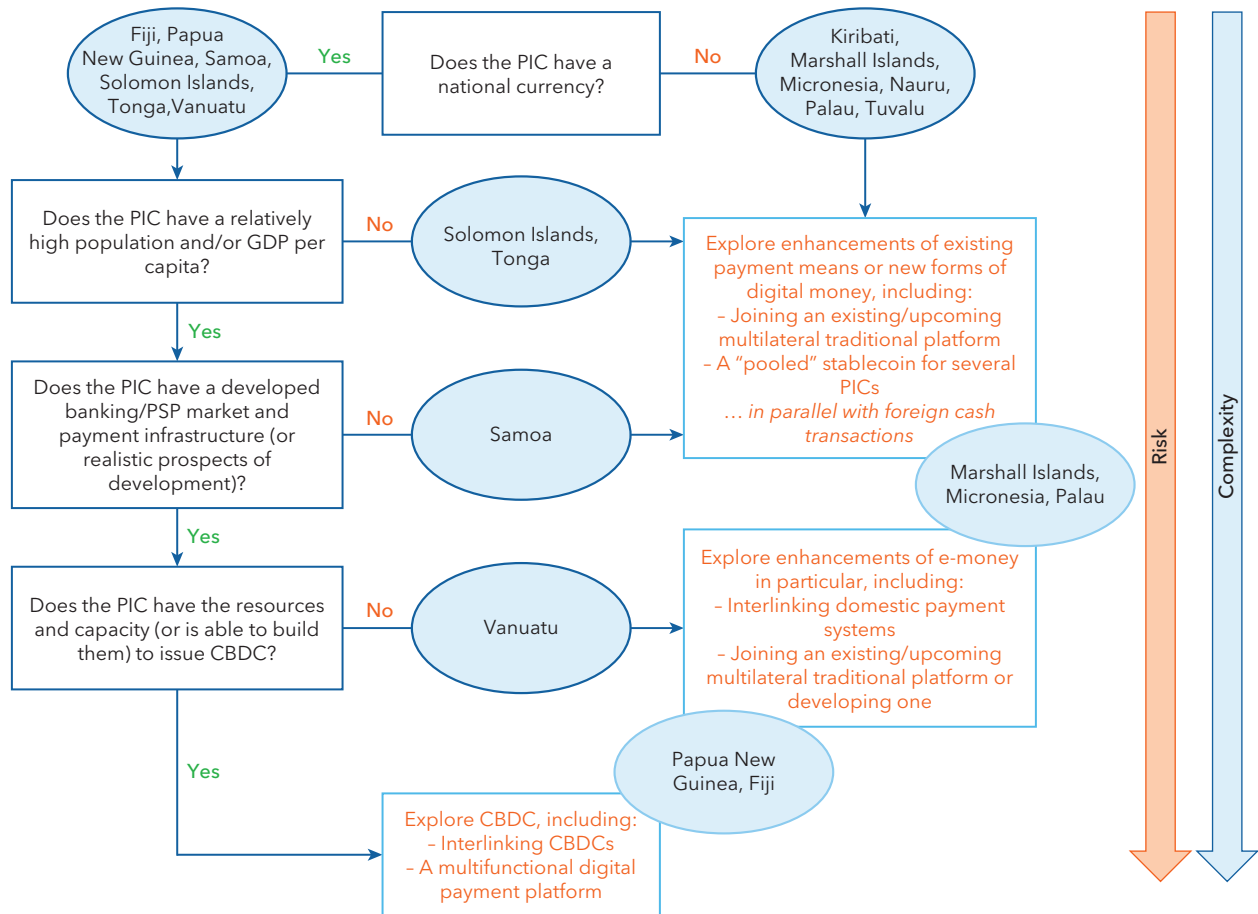
its existing payment systems. Micronesia, Nauru, and Palau are less interconnected and have fewer trading relationships with other PICs. Marshall Islands is a net importer and relies relatively less on tourism, hence payment flows are directed mostly toward major economies.

PICs' large trading relationships should be an important factor in considering cross-border payment solutions. PICs mainly transact with major economies outside of the region, with Australia, China, Japan, and Singapore as key counterparts (Figure 9). Some PICs, and in particular Fiji, Papua New Guinea, and Vanuatu, trade with economies that already have a live CBDC (for example, The Bahamas, Jamaica, and Nigeria), while all PICs trade with countries with live CBDC pilots (for example, Australia, China, Singapore, and South Korea). These circumstances are important, as any domestic and/or cross-border digital payment solution explored by PICs needs to prioritize interoperability with other CBDCs in order to be future-proof. For the least interconnected PICs, it is possible that the volume of cross-border transactions with other PICs or external partners is limited and will likely remain so for the short to medium term. These countries require a much more careful and tailored approach to introducing new forms of digital money.

A Regional Approach for Digital Money Exploration

Digital money must accommodate a variety of situations in the PICs, such as the existence or not of a national currency and the maturity of domestic payment systems. The following options could be explored by PICs jointly when it comes to leveraging domestic digital money initiatives for use in cross-border payments or, conversely, developing cross-border payments systems that could also cater for specific domestic money needs. A decision tree considering some of the relevant decision factors can help guide PICs in their choice of an option (Figure 10).

A. Interlinking traditional domestic payment systems (for example, Thailand and Singapore): This option is relevant for those PICs that either already have payment systems in place such as a real-time gross settlement or automated clearing house (for example, Fiji, Papua New Guinea, and Tonga) or are developing one (for example, Samoa, Solomon Islands, and Vanuatu); it is particularly relevant for PICs that already have some economic relationship (for example, bilateral trade or seasonal workers from one PIC to another). It should be conducted concomitantly with efforts to improve e-money availability and safety. This option can leverage work done in the context of the Group of Twenty (G20) cross-border roadmap ("the roadmap"), on Building Block 13 (interlinking of payment systems).

Figure 10. A Decision Tree for Introducing Digital Money in PICs

Source: IMF staff.

Note: PICs are allocated to one of the three guidance red text squares solely based on the factors in the black text squares. This may not correspond to the reality in the country (e.g., a PIC may already explore CBDC, while the tree suggests it should rather consider enhancements of exiting payment means). Precise recommendations to PICs can be given only after a more thorough analysis, along several other factors, in technical assistance. CBDC = central bank digital currency; PIC = Pacific island country; PSP = payment service provider.

B. Interlinking CBDCs (for example, in a platform such as the one outlined by Project Iceberg of the BIS Innovation Hub),¹⁵ which is relevant for those PICs that are in a better position to eventually issue CBDC (for example, already have a national currency), but only once CBDC is in place. This avenue should also account for the main PICs' trading partners adopting CBDC and leverage the roadmap's work of Building Block 19 (factoring an international dimension into CBDC design).

*C. Developing multilateral payment platforms in the region or joining existing/upcoming platforms*¹⁶:

- i. Traditional (a centralized cross-border and multi-currency payment system): For example, Buna (Arab Monetary Fund). This option could build on work done in the roadmap context on Building Block 17 (multilateral platforms).

¹⁵ For further details, see <https://www.bis.org/about/bisih/topics/cbdc/icebreaker.htm>.

¹⁶ Such as the mBridge project hosted by the BIS Innovation Hub Hong Kong Center and the Nexus project hosted by the BIS Innovation Hub Singapore Center.

- ii. “Pooled” stablecoin (private or public sector issued): This option implies a multiregional regulation/oversight and may be more suitable for PICs with no national currencies. It is currently being explored by some PICs with help of private technology companies.
- iii. A digital platform that plugs in any type of digital money (for example, project mBridge,¹⁷ X-C,¹⁸ or the UN Capital Development Fund’s global internetwork for remittances¹⁹): This option could accommodate any type of digital money transaction clearing and settlement, whether with e-money, stablecoins, CBDCs, etc. The platform could take in any of these digital monies and hold them in an escrow account and issue a token against them for settlement (Adrian and others 2022). Then countries can trade these digital monies across borders on alternative rails, such as distributed ledger technology networks that span different countries. A conversion mechanism should be provided in the platform that can perform foreign exchange conversion, as well as convert payments in different currencies against unbacked crypto assets and stablecoins.

Considering the uncertainty of what type of digital money will be introduced by PICs, one promising approach for enhancing cross-border payments seems to be a multifunctional regional platform. However, this option (option C[iii] in the previous list) is also one of the most demanding, as it entails a high degree of integration of systems that may not be compatible up front (for example, a CBDC of a PIC with a real-time gross settlement of another PIC). Hence, other options cannot be excluded just yet, as some PICs have specific issues such as an urgency to address decreasing CBRs, which may require a swift implementation of other less demanding options. In this vein, there is the possibility that private sector companies already active in projects in the region might develop private cross-border solutions based on new technologies. PICs could explore the pros and cons of these different options, prepare design options, and produce proofs of concept. Importantly, such private sector initiatives must be subject to robust regulation and supervision by the authorities.

B. Requirements for Adoption

Digital money adoption builds on several key elements: digital technology, business models, use cases, and legal and regulatory compliance (Sun and Rizaldy 2023). In addition, safeguarding financial integrity has become increasingly challenging because some of the characteristics of digital money (such as the speed and ease of moving funds and mechanisms to obfuscate user and transaction data) render supervisory and law enforcement action more difficult.

Digital Technology

Underlying digital technology for digital money needs to be stable, adequate, available, and accessible. Sustained adoption of any digital payment instrument increases reliance on underlying digital technology and infrastructure and amplifies the need for service continuity (Box 3). Any service outage, particularly with a newly issued payment instrument, could result in an erosion of consumer confidence and trust. Operational and digital resilience of the end-to-end process, participant systems, and the enabling infrastructure for the CBDC ecosystem is therefore necessary for sustained adoption of digital money. This includes safe and stable network connectivity with adequate bandwidth for core systems, reliability and availability of cloud-based infrastructure, and a sufficiently scalable digital environment to accommodate unexpected or periodic spikes in transaction volumes.

Effective implementation of digital money is contingent upon the availability of basic infrastructure and digital identification, as well as adequate levels of financial and digital literacy.

¹⁷ For further details, see https://www.bis.org/about/bisih/topics/cbdc/mcbdc_bridge.htm.

¹⁸ See <https://www.imf.org/en/Publications/WP/Issues/2022/11/04/A-Multi-Currency-Exchange-and-Contracting-Platform-525445>.

¹⁹ See <https://migrantmoney.uncdf.org/docs/open-regulated-global-payments-inter-network>.

Box 3. Digital Infrastructure Requirements for Digital Money

Digital money solutions comprise multiple connected parties and interfaces which blur traditional boundaries of oversight, surveillance, and assurance. Each of these represents a potential point of failure or an entry point for a cyberattack. As such, operational disruptions caused by a failure of an end point or a core infrastructural component, or a cyber event are likely, and therefore should be anticipated, particularly in environments where digital readiness and risk awareness are suboptimal. While efforts should be made to prevent disruptions through appropriate policies and controls, focus should also be placed on timely recovery from such events to minimize the impact on consumers. Governance of such systems should include documented and tested disaster recovery, incident response, and business continuity arrangements, individually and collectively, for core systems, intermediaries, and third-party solution providers.

Digital money ecosystems are vast and complex and will challenge existing processes and controls. Such systems should be designed to be resilient through a combination of technology, people, and processes with effective governance and oversight.

Core technology components such as hardware, software, storage devices, network switches, and end points should be fit for purpose. They should have built-in redundancies, be up to date in terms of upgrades and patches, be fully supported by vendors, and be appropriately managed for any vulnerabilities.

Reliance on technology vendors should be balanced with internal capacity and oversight. Vendor contracts should be structured to avoid lock-ins and include clearly defined operational parameters and exit clauses.

The people element in the context of resilience should be viewed from three angles:

- Skilled and adequate operational resources to manage, maintain, and protect systems from failure or cyberattacks, and spot anomalies in behaviors, data transmission, and exfiltration. These could be due to insider threats or external events.
- Skilled and adequate resources to manage the risks of digital systems, define controls, monitor for any potential failure, and report the information internally and for compliance purposes.
- Risk-aware users: End users of the system should be trained to secure their devices or respond to a particular threat appropriately. They should be able to spot exploitation attempts by perpetrators and know how to report them.

Processes should be reviewed frequently for effectiveness and updated to accommodate changes in technology, evolving operational risks and cyber threats. This includes access management, change management, patch management, and vulnerability management. Assurance teams should be sufficiently skilled to identify issues and anomalies and any emerging risks and escalate for remediation on a timely basis. In addition, independent reviews and stress tests should be carried out periodically to assess effectiveness of control mechanisms.

- Basic infrastructure of electricity, internet, mobile network coverage, and smartphone penetration in several of the PICs is insufficient to support sustained, efficient, and secure use of digital money. Low capacity and inadequate preparedness, and often limited resources for outsourcing effective response to operational/cyber disruptions, are likely to lead to prolonged service outages and consequently have financial stability implications.

- Digital identities should ideally be in place for secure access to digital money systems and authorized transmission of payments, but these are only present in Palau and Papua New Guinea. Although these two countries have implemented digital identifiers, the extent of adoption and usability is yet to be confirmed. Similarly, only four countries (Fiji, Samoa, Tonga, Vanuatu) have national digital strategies demonstrating commitment to digitization from the authorities.
- Given low rates of financial inclusion, it is also likely that there is insufficient digital and financial literacy and therefore inadequate risk awareness. This weakness could create vulnerabilities in the digital money ecosystem and compromise the integrity of data and transactions.

Business Models

Digital money service providers should be motivated to develop business models that generate sustained revenue and manage costs. They can reach a sustainable business by collecting fees and cross-subsidy as payment revenues, while managing fixed and variable costs.²⁰ These business models not only provide incentives for merchants but also reduce the risk of a provider to default due to an unsustainable business model. Data-driven business models could be considered in promoting digital money adoption, depending on data privacy policies in different jurisdictions. If digital money service providers do not have sustainable business models for digital money provision, adoption will be too limited to allow the policymakers to achieve their policy objectives.

Use Cases

Digital money must be widely used in various use cases.²¹ For instance, demand for transportation, food delivery, streaming services, e-commerce, social network, and online media (video streaming, music, gaming), as well as digital finance, must be available and provide solid use cases. By creating and expanding use cases, digital money must provide value for merchants and consumers. Adoption of digital money is less about payment than about use cases. Various business cases have promoted adoption by increasing economies of scale and economies of scope.

Legal and Regulatory Compliance

The adoption of digital money should be supported by a legal framework that provides certainty on the legal status of digital money and its implications, and adequately safeguards parties involved from risks.

- To issue a token based CBDC, the central bank must have a clear mandate to issue currency in digital form. This is important because CBDC is a liability of the central bank, and most central banks are authorized to exercise and perform only the functions and powers established in their applicable laws. A CBDC based on a current account contractual relationship between the central bank and the CBDC holder entails other legal implications (Box 4). Similarly, for the issuance of a state- or government-backed stablecoin, the government would require a legal mandate or authority for such an issuance, which will depend on the legal traditions or legal system in that country. It should be noted that government-backed stablecoins may give rise to additional risks.
- The legal framework on the holding and transfer of CBDC or government-backed stablecoins has to be clear to reflect a direct claim on the central bank or government, respectively. In particular for a government-backed stablecoin, the law needs to provide that the stablecoin is backed or guaranteed by the

²⁰ For example, a company may charge zero fees for a payment system usage knowing they can profit from a service that is added on top of that infrastructure.

²¹ Because of high fixed costs, payment networks often need to sign up a minimum number of users (“critical mass”) for the total value of the network to exceed its operating costs (CPSS 2012).

Box 4. Additional Legal Considerations for Digital Money

Central bank digital currency (CBDC) and government-backed stablecoins: The legal relationship between the central bank and the holder of CBDC is relevant from the legal perspective. If the CBDC design involves a current account contractual relationship, the central bank would have to be authorized to open current accounts to the holders of CBDC; holders may be banks and other financial institutions (“wholesale”), but also individuals and legal persons in general (“retail”). If it is classified as token-based CBDC, thus expressed by means of a digital token issued by a central bank, opening deposit accounts in the central bank books for CBDC holders is not necessary. However, for token-based CBDC, the central bank should be granted the powers to acquire, distribute, withdraw, and destroy such CBDC, as is the case with banknotes and coins (Bossu and others 2020). Further, in the case of an account-based government-backed stablecoin, the relevant question is whether the government can open individual accounts directly for the public.

Legal tender status for CBDC and government-backed stablecoins: In general, legal tender status granted to an official means of payment such as currency allows a debtor of a monetary obligation to extinguish it validly by tendering the official means of payment to the creditor. Currently, there is no precedent on the necessity of the legal tender status for reaching wide acceptance of digital money among the general public. In determining whether to grant legal tender status to CBDC or government-backed stablecoins, a consideration should be ease of access of such digital money to most of the population of a given country.

Safekeeping of funds in e-money schemes: The legal and regulatory framework should require e-money issuers to safeguard users’ funds. To this end, e-money issuers are generally required to keep a pool of liquid funds at least equivalent to the aggregate balance of their users’ funds. In addition, the legal and regulatory framework should require e-money issuers to segregate users’ funds from e-money issuers’ assets and liabilities. If customer funds are commingled with funds belonging to the e-money issuer or, in general, considered part of the issuer’s estate, then, in case of its insolvency, all or part of those resources may be distributed to other general creditors as well. Among the most utilized mechanisms for segregation of assets are trusts, fiduciary contracts, escrow accounts, or even legal provisions stating that any funds held by the e-money issuer that belong to its customers are deemed separate from the issuer’s assets and cannot be seized by its creditors (Dobler and others 2021).

government. The legal framework should be clear about the redemption of such stablecoin by the public and the specific redemption modalities. Also, effective regulation of custodians holding the reserve assets of the stablecoin will be crucial to ensure a smooth and efficient redemption process.

- The legal framework for indirect or two-tier holding structures (that is, token-based CBDC/government-backed stablecoins held on wallets offered by third parties) will also need to clarify the ownership structure of the digital money, in particular, who in effect owns the digital money which is held on wallets by intermediary custodians or wallet providers. This determines the rights of holders in the event of the insolvency of such intermediaries.
- Countries should consider whether and how issuers and PSPs participating in the operational arrangements of privately issued digital money will be regulated and supervised. Recently, the Financial Stability Board called for stablecoins to be held to high regulatory and transparency standards, while maintaining “at all times the reserves that preserve stability of value and meet relevant international standards” (FSB press release 24/2022, page 2). However, with the exception of the FATF Standards on AML/CFT, there are currently no international standards in place for the regulation and supervision of all types of digital

money.²² Nevertheless, several countries have set comprehensive legal frameworks on the matter, for instance requiring e-money issuers to obtain a license and comply with prudential standards for their operation (Dobler and others 2021).

- Cross-border payments using digital money entail another set of legal considerations. To ensure safe, effective, and efficient cross-border payments using digital money, it is thus critical to have legal and regulatory consistency between jurisdictions (for example, on interlinking of domestic payment systems and interoperability, finality of payments, insolvency, and data protection).

Additionally, supporting legislation on consumer protection and data privacy should be considered to ensure proper handling of personal and financial data of the holders of CBDC and government-backed stablecoins. A retail CBDC whose circulation is administered by the central bank (direct/one-tier CBDC) would generate granular data about users' financial transactions that should be protected by the given central bank. In intermediated models (two-tier CBDC), intermediaries would be charged with the responsibility to protect such information. Government-backed stablecoins would also generate granular data on holders, which need to be protected by all parties involved. Legal requirements should cover any parties or agents that play a role in the processing of digital money transactions and should balance the protection of consumers and the need to counteract criminal activity.

Financial Integrity

Virtual assets, including stablecoins, have the potential to be misused for illicit purposes, including ML and TF. They are vulnerable to criminal misuse due to their potential for anonymity, global reach, and ease of layering of illicit funds. Stablecoins, in particular, are considered to present heightened risks to financial integrity due to their potential for wide market adoption as a means of exchange (given their relatively stable value, liquidity, and ability to be freely exchanged; FATF 2020). A stablecoin issued as legal tender will have the government's "endorsement" and may therefore be even more accessible and widely used (see Box 5).

CBDCs may also bear ML/TF risks. As digital representations of fiat, CBDCs have the potential for significant reach and widespread adoption. ML/TF risks could arise from and depend on their nature (for example, retail versus wholesale, domestic versus cross-border), unique characteristics/design choices (for example, tiered wallets to preserve privacy), and/or ecosystem (for example, the service providers, intermediaries, and user base).

- *CBDC ecosystem and scope:* While a wide and varied user base may be desirable for a CBDC, the number and jurisdiction of residence of users will impact the level of ML/TF risks. Similarly, the number, type and location of intermediaries involved in the issuance, distribution, and use cases of the CBDC will have regulatory and supervisory implications, particularly as service providers in a cross-border arrangement may be located abroad.
- *Level of intermediation and allocation of AML/CFT responsibilities:* Depending on the CBDC's design, central banks may be taking on new roles and responsibilities. In a one-tier model, the central bank would have a direct relationship with end users, and, as a result, would have AML/CFT obligations. In a two-tier model, AML/CFT obligations would remain with intermediaries. Ensuring that all relevant actors are subject to the AML/CFT regime and supervised would be key in this model.

²² International standards do exist for instance on the financial market infrastructures that clear and settle transactions with some types of digital money (that is, the Committee on Payments and Market Infrastructures-International Organization of Securities Commissions Principles for Financial Market Infrastructures, and more recently the guidance on the application of the Principles for Financial Market Infrastructures to systemically important stablecoin arrangements) or on some of the digital money providers (for example, on banks), but no comprehensive standard exists. In relation to crypto assets, the IMF recently published guidance on key elements of an appropriate policy response for unbacked tokens and stablecoins (IMF 2023f).

Box 5. Some Financial Integrity Considerations for Government-Backed Stablecoins

Pacific island countries should understand the potential money laundering (ML) and terrorist financing (TF) risks of a proposed government-backed stablecoin prior to its launch. The FATF Standards require countries to assess the ML/TF risks associated with new products and technologies such as stablecoins in order to develop measures to effectively mitigate the risk of their misuse for ML/TF purposes.¹ Countries should understand the potential ML/TF risks arising from the design features and intended use of the stablecoin (for example, level of anonymity permitted, cross-border functionality), and a strategy to mitigate these risks effectively. Risk understanding and mitigation strategies should be updated during the preparatory stage(s) as well as after stablecoin issuance, based on the data collected and analysis of such data.

Various entities in a stablecoin arrangement may have anti-money laundering/combating the financing of terrorism (AML/CFT) obligations, either as financial institutions or virtual asset service providers.² The scope of responsibilities of these entities will depend on whether the stablecoin arrangement is centralized or decentralized and whether entities within the arrangement are undertaking any of the business activities covered by the FATF Standards, in particular the activities listed under the definitions of financial institutions and virtual asset service providers.³ These standards treat financial institutions and virtual asset service providers (among others) as “gatekeepers” which are obligated to mitigate the risk of criminal misuse of the financial system by implementing AML/CFT controls such as customer due diligence, monitoring of transactions, reporting of suspicious transactions, and record-keeping. They must also assess the ML/TF risks of their business activities, including the risks associated with the development of new products, technologies, business practices, and delivery mechanisms, and ensure that they implement AML/CFT controls commensurate with those risks.

Pacific island countries that are considering issuing a government-backed stablecoin should carefully consider the adequacy of their legal framework, as well as their capacity of AML/CFT-competent authorities. They should ensure that the legal framework provides the structure for appropriate mitigation of the ML/TF risks raised by stablecoins. In addition, they should ensure that the competent AML/CFT authorities have the relevant expertise to supervise AML/CFT-regulated entities in a stablecoin arrangement; conduct financial analysis of potentially suspicious transactions involving stablecoins; and investigate, prosecute, and sanction criminal activities involving stablecoins. This may require training to develop new skills and appropriate technological tools to support these efforts.

¹ FATF 2023, Recommendation 15 and Interpretive Note to Recommendation 15.

² FATF 2020, ¶ 48.

³ Under the FATF Standards, there are three categories of reporting entities, including financial institutions and virtual asset service providers. A financial institution is any natural or legal person who conducts, as a business, activities such as acceptance of deposits from the public, lending, money, or value transfer services; issuing and managing means of payment; and administering funds on behalf of another person. Virtual asset service providers are natural or legal persons who conduct, as a business on behalf of another person, any of the following activities: exchange between virtual assets and fiat currencies; exchange between one or more forms of virtual assets; transfer, safekeeping, and/or administration; and participation in and provision of financial services related to an issuer's offer and/or sale of a virtual asset. See the glossary to the FATF Standards for complete definitions (FATF 2023).

- *User identification and due diligence:* A critical component of AML/CFT requirements is identifying the customer and source of funds. Due diligence challenges might differ between account-based or token-based CBDC arrangements, and as with traditional financial services, these challenges are likely to be magnified in a cross-border context. Some rules pertaining to “traditional” financial transactions (for

example, the wire transfer rule²³) may require further thought in the context of a CBDC arrangement.

- *Monitoring AML/CFT compliance:* The evolution of new service providers and/or services may require adaptation of AML/CFT laws and regulations, supervisory models, and organizational structures of AML/CFT supervisors. Coordination with other key AML/CFT agencies as well as foreign counterparts (in the case of cross-border arrangements) will also be important (see BIS 2022).

PICs may not be well situated to address ML/TF risks arising from digital money. As established in their respective mutual evaluation reports, PICs have historically struggled to mitigate their ML/TF risks effectively, notably due to resource constraints, including limited law enforcement and supervisory capacity. Introducing new risks may place an additional strain on the countries' AML/CFT systems, which could exacerbate existing AML/CFT deficiencies. Weakening the domestic AML/CFT regime also could intensify CBR pressures and lead to further tightening of access to global markets, which is the opposite intended effect of pursuing technological solutions like digital assets. Inconsistent application of AML/CFT controls across the region may also lead to regulatory arbitrage.

AML/CFT regimes will need to be adapted and strengthened to adequately regulate digital money and safeguard financial integrity. Countries should assess potential ML/TF risks in a forward-looking manner and take the necessary steps to mitigate these risks effectively. Significant legal and regulatory changes and institutional capacity building may be needed to ensure that all relevant actors in the digital money ecosystem have AML/CFT obligations and are subject to risk-based AML/CFT supervision and sanctions for noncompliance. Countries also need to ensure that the criminal justice system can be effectively applied. In particular, law enforcement agencies need to be empowered and equipped with proper resources and expertise to investigate and prosecute cases involving use of digital money for illicit purposes.

C. Design Considerations for Pacific Island Countries

Given PICs' challenges and constraints, some design features should be considered when introducing digital money:

- To deal with poor network connectivity, *offline functionality* could be part of the design of digital money. In the context of a CBDC, offline functionality is available and is being considered by many advanced economies and low-income countries.
- To establish a sustainable business model, design could be targeted to enable *data collection* (such as transaction data, at appropriate levels of anonymization).
- To promote financial literacy, certain *onboarding design features* may help (for example, simplified customer due diligence requirements where there are demonstrated low ML/TF risks), in addition to education and training. Risk awareness campaigns should precede any launch of digital money and continue periodically.
- To ensure interoperability, the fragmented solutions offered by a variety of banks and PSPs should be upgraded to use *international standards and common application programming interfaces*, while new ones could be designed based on such standards.
- To enhance cross-border payments, *programmability* and smart contracts could be used to facilitate safe and targeted disbursement of aid to these countries.

²³ FATF Recommendation 16 requires countries to ensure that specific information on the originator and beneficiary of transactions be included in wire transfers or related messages throughout the payment chain. The FATF is currently discussing potential revisions to Recommendation 16.

5. Conclusion and Next Steps

Among the world's most remote and geographically dispersed countries, PICs face major challenges for financial inclusion and cross-border payments which well-designed digital money could eventually help mitigate. People in PICs often lack access to basic financial services, which constrains government services and exacerbates inequality and poverty. Moreover, the ongoing reduction of CBRs in PICs threaten to cut some countries' access to international finance, including limiting their ability to receive remittances from abroad, which would have a significant adverse macroeconomic and social impact for PICs.

Digital money, through a digital currency and/or an efficient payment system, may play an important role in addressing these challenges and provide economic benefits for PICs. One key benefit is the potential of digital money to help circumvent structural barriers in PICs that hinder financial inclusion and the delivery of government support, for example, by overcoming the restrictions of physical presence, significantly lowering transaction costs, and better targeting aid for the most vulnerable. CBDCs, if appropriately designed and implemented, could also create a clean slate and help alleviate CBR pressures in the region and promote smoother cross-border payments.

Widespread and ill-prepared introduction of digital money may result in financial, technological, and legal risks. For PICs with no national currencies, unregulated and unsupervised crypto assets and stablecoins could introduce a backdoor form of dollarization and create difficulties in financial flow monitoring and management (including capital and illicit flows). Many PICs are cash dominant, and customer deposits are concentrated in very few banks or even one bank. Digital money created by the private sector may trigger "digital runs" and loss of deposits by private sector banks, which would put pressure on bank profits (with already limited presence in the region) and restrict credit supply to the economy. In PICs with low capacity and information technology preparedness, prolonged operational technology disruptions may lead to financial stability risks. Digital money may also bring risks related to governance, legal and regulatory frameworks, technology, and adoption.

PICs may face particular challenges in identifying and mitigating the risks to financial integrity arising from digital money. Their AML/CFT regimes need to be adapted and their implementation strengthened to regulate adequately digital money and mitigate the ML/TF risks, including with a view to avoid further pressure on existing CBRs. Despite its advantages, digital money may create opportunities for illicit actors to commit crimes such as cyber fraud, ML, and TF. CBDCs and stablecoins adopted as legal tender may be particularly attractive to illicit actors given their potential for significant reach and widespread adoption. PICs should assess the ML/TF risks presented in order to determine appropriate mitigation measures. This may involve significant legal and regulatory changes and considerable effort to ensure that all competent authorities, in particular AML/CFT supervisors, financial intelligence units, and law enforcement agencies, have the necessary tools and resources to conduct their function effectively.

The introduction and eventual adoption of digital money in PICs requires basic elements such as digital technology, business models, use cases, and legal and regulatory compliance. Reliable electricity, internet, and cellular network coverage and adoption of emerging digital technologies (for example, cloud computing) are the basis to promote the use and adoption of digital money. Digital money service providers should be motivated to develop business models that generate sustained revenue and cover costs, and digital money must be widely used in various use cases, including by tourists who provide a large part of the income to many PICs. The legal framework should be clear on the legal status of digital money and its implications and adequately safeguard agents involved from risks. Moreover, policymakers in PICs need to provide an appropriate regulatory framework for digital money service providers to comply with.

Some digital money design features can be considered to address the challenges PICs face. For example, offline functionality could be part of the design to deal with poor network connectivity and enabling information sharing can create innovative business models and cross selling opportunities (for example, M-Pesa in Kenya). Programmability is a strong feature of a CBDC which could be used to facilitate safe and targeted disbursement of aid to PICs. Financial literacy education and risk awareness campaigns should precede any launch of digital money and continue periodically.

Determining an adequate model for digital money and payment infrastructures in PICs is complex. Therefore, a cautious step-by-step approach would help PICs explore digital money to harness the potential benefits while guarding against various risks. It is important to note that individual countries will face different circumstances and capacity constraints that may influence the ultimate choices. Nevertheless, unbacked crypto assets, associated with many risks, should generally not be granted official currency or legal tender status (Bains and others 2022). A foreign currency-based stablecoin is potentially a digital money alternative for those PICs with no national currencies, but it requires strong regulation and supervision and therefore should be approached cautiously. Countries with a national currency may eventually be able to introduce a CBDC, though this is unlikely to be appropriate in the short to medium term. Considering the uncertainty of what type of digital money can be introduced in the PICs, it seems that the best medium- to long-term solution for addressing both domestic and cross-border payment challenges is that PICs join a “multifunctional” regional platform being developed by the trading partners of the PICs. Such platforms would allow PICs with different types of money and payment systems to join (that is, both those with a national currency [and in the future a potential CBDC] and those without national currency [using either foreign currencies-based e-money or a sovereign-issued stablecoin instead]) and both those with established national payment systems and those relying on foreign payment systems for clearing and settlement of transactions.

A regional approach to digital money exploration could help overcome capacity and scalability constraints, including participation in digital platforms and regional networks, and collaboration and knowledge sharing. Potential benefits from digital money suggest that they should be part of a national or regional digitalization and financial inclusion strategy (IMF 2023d). At the same time, countries should bear in mind the risks associated with digital money and evaluate new technologies with their development partners before implementation to ensure their sustainable adoption. Effective collaboration with international organizations, such as the IMF, could help knowledge exchange and experience sharing.

Annex 1. Implications of Digital Money on Financial Inclusion²⁴

Following IMF (2018), a panel regression analysis is performed to identify the relationship between digital and mobile technology and financial inclusion. The estimation model is specified as follows:

$$Y_i = \alpha + \beta_1 X_i + \beta_2 C_i + u_i$$

Dependent variables (Y_i) include three measures of financial inclusion, namely (1) number of commercial bank branches per 100,000 adults, (2) number of deposit accounts with commercial banks per 1,000 adults, and (3) number of loan accounts with commercial banks per 1,000 adults. Explanatory variables (X_i) include two indicators proxied for access to financial technology, including mobile cellular subscriptions (per 100 people) and individuals using the internet (in percent of population). Control variables (C_i) comprise gross national income per capita (Atlas method, current US dollars) and regional dummies. Data are from the IMF's Financial Access Survey database and the World Bank's World Development Index database, ranging from 2004 to 2020. Data are unbalanced panel, subject to data availability. The panel regressions are estimated with both simple ordinary least squared and fixed effects models with robust standard errors.

Staff analysis finds a positive correlation between measures of access to digital and mobile technology and financial inclusion (Annex Tables 1.1 and 1.2). The results for PICs suggest a 1 percentage point increase in internet access is associated with about a 10- to 14-unit increase in deposit accounts per 1,000 adults and about a 1-unit increase in loan accounts per 1,000 adults, respectively. An increase in internet access is also associated with an expansion of bank branches in PICs, suggesting a complementary effect of financial innovation on traditional banking services. A similar effect is found for mobile phone access, though the estimated impacts are relatively milder than those of internet penetration.

For PICs, our results suggest that digital and mobile technology could help improve financial inclusion. Using the estimated coefficients for digital and mobile access, the scenario analysis assumes digital and mobile access in PICs would rise from their current level to the level equivalent to that of top runner of the upper-middle-income country group such as Malaysia and other East Asian peers. For example, the internet access in Papua New Guinea and Solomon Islands is 13 percent lower than that of the top runner, and mobile access in the Micronesia is just about a tenth of the top runner. The results show that both deposit and loan accounts could increase significantly with improved digital access, on average for PICs, from 1,021 and 114 to around 1,700 and 165, respectively, of which, Micronesia and Papua New Guinea are among the top gainers from improved digital access that enhances financial inclusion.

²⁴ Prepared by Shinya Kotera (European Department).

Annex Table 1.1. Financial Inclusion and Digital and Mobile Technology¹

Estimation Approach		Simple OLS			Fixed Effects		
Dependent Variables	Branch	Deposit	Loan	Branch	Deposit	Loan	
Internet Access	~	+	+	-	+	+	
	PICs only	+	+	+	+	~	
Mobile Access	+	~	+	+	+	+	
	PICs only	+	+	~	~	~	

Source: IMF staff estimates.

Note: + = positive and significant; - = negative and significant; ~ = not significant; OLS = ordinary least squared; PICs = Pacific island countries.

¹Based on regression analysis using simple OLS and OLS with country-fixed effects. Dependent variables include financial inclusion measures (1) number of commercial bank branches per 100,000 adults, (2) number of deposit accounts per 1,000 adults, and (3) number of loan accounts per 1,000 adults. Explanatory variables comprise proxies for digital technology—the ratio of individuals using the internet, mobile access—ratio of mobile phone subscriptions, and control variables such as level of income and regional dummies. Samples include 183 countries, spanning from 2004 to 2020.

Annex Table 1.2. Regression Results

Dependent Variables	Simple OLS			Fixed Effect		
	Branch (i)	Deposit (ii)	Loan (iii)	Branch (iv)	Deposit (v)	Loan (vi)
Internet Access	-0.024 (0.018)	23.105*** (1.784)	4.897*** (0.887)	-0.101*** (0.025)	8.150*** (2.130)	2.711** (1.287)
Internet Access*PICs	0.197** (0.080)	-13.392*** (3.364)	-4.008*** (0.945)	0.173*** (0.049)	5.560 (5.270)	-2.620** (1.274)
Mobile Access	0.058*** (0.007)	-0.057 (0.720)	0.772*** (0.244)	0.072*** (0.008)	2.912*** (0.809)	0.663** (0.327)
Mobile Access*PICs	-0.050* (0.030)	7.186*** (1.396)	-0.294 (0.310)	-0.064** (0.031)	0.101 (2.308)	-0.762** (0.370)
GNI per Capita	0.000*** (0.000)	0.007** (0.003)	0.006*** (0.001)	-0.000*** (0.000)	0.009 (0.009)	0.009* (0.005)
Constant	11.821*** (0.684)	111.437** (50.510)	160.006*** (24.194)	18.192*** (0.784)	540.192*** (125.147)	107.283** (44.015)
Regional Dummies ¹	Yes	Yes	Yes	No	No	No
Memorandum Items ²						
Marginal Impact of Internet Access for PICs Only	0.173** (0.078)	9.714*** (2.856)	0.889** (0.414)	0.072* (0.042)	13.709*** (4.833)	0.090 (0.367)
Marginal Impact of Mobile Access for PICs Only	0.008 (0.029)	7.129*** (1.201)	0.478** (0.186)	0.008 (0.029)	3.014 (2.156)	-0.099 (0.160)
Observations	2,774	1,728	1,416	2,774	1,728	1,416
R-squared	0.383	0.510	0.450	0.120	0.232	0.102
Number of Country				183	129	116

Source: IMF staff estimates.

Note: Based on regression analysis using simple OLS and OLS with country-fixed effects. Dependent variables include financial inclusion measures: (1) number of commercial bank branches per 100,000 adults, (2) number of deposit accounts per 1,000 adults, and (3) number of loan accounts per 1,000 adults. Explanatory variables comprise proxies for digital technology—the ratio of individuals using the internet, mobile access—ratio of mobile phone subscriptions, and control variables such as level of income and regional dummies. Samples include 183 countries, spanning from 2004 to 2020. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. GNI = gross national income; OLS = ordinary least squared; PICs = Pacific island countries.

¹Regional dummies include Western Hemisphere, Asia and Pacific, Middle East and Central Asia, Africa, and Europe.

²Estimated impacts of internet or mobile access on financial inclusion among PICs only. PICs include Fiji, Kiribati, Marshall Islands, Micronesia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu.

Annex 2. Implications of Digital Money on Government Service Delivery²⁵

A scenario analysis is performed on the implications of enhancing government support delivery through digital money²⁶ on income inequality. The analysis uses data of quintile income distribution from the World Bank Poverty and Inequality Platform (WBPI) and data of the share of unbanked and banked population in each quintile income distribution from the Financial Services Demand Side Survey (FSDS) for four PIC countries: Fiji (2019 WBPI and 2014 FSDS data), Samoa (2013 WBPI and 2015 FSDS data), Tonga (2015 WBPI and 2016 FSDS data), and Vanuatu (2019 WBPI and 2016 FSDS data). Given the lack of individual-level survey data, the analysis applies the scenario assumptions for an increase in access to financial services and/or fiscal support on the aggregate income group.

The analysis compares three scenarios:

- *Scenario 1* presents a baseline with the actual income distribution and no fiscal support.
- *Scenario 2* assumes fiscal support of 10 percent of national income distributed through digital money to the poorest 20 percent of the population who have access to formal financial services or a bank account.
- *Scenario 3* presents a hypothetical case where all individuals—both banked and unbanked population—in the poorest 20 percent of the population can benefit from the digital fiscal support.

For each scenario, the income of each quintile before or after receiving the fiscal support of 10 percent of national income is calculated. The measure of income inequality is proxied by the relative gap between the top and bottom income quintiles, called the *income quintile share ratio*—the ratio of the share of income of the richest top 20 percent of the income distribution to the share of income of the poorest bottom 20 percent of the income distribution.

Annex Table 2.1 present the simulation results for our assumed scenarios compared to the status quo (see also Figure 6). In Scenario 2, the reduction in inequality ranges from 25 percent in Vanuatu to 37 percent in Fiji, compared to the status quo (Scenario 1). In Scenario 3, for which both banked and unbanked population could receive fiscal support via digital money, inequality is significantly reduced by more than half in all four PICs.

Annex Table 2.1. Reduction in Income Quintile Ratio from Status Quo

	Fiji	Tonga	Vanuatu	Samoa
Scenario 2	–37	–24	–25	–33
Scenario 3	–54	–60	–57	–60

Source: IMF staff estimates.

²⁵ Prepared by Antoine Arnaud (Strategy, Policy and Review Department) and Bo Zhao (Secretary's Department).

²⁶ The scenario analysis captures only a partial equilibrium, in which the analysis does not take into account financing sources for such fiscal support.

Annex 3. Digital Money for Pacific Island Countries Fact Finding Survey Results²⁷

Annex Table 3.1. Fiji

Category	Description
Currency	Fiji's national currency is the Fiji dollar. The exchange rate regime is conventional peg versus a currency composite, with basket consisting of US dollars, Australian dollars, New Zealand dollars, euros, and Japanese yen. A total of 4.89 percent of total deposits was in foreign currency as of June 2022.
Payment Infrastructure	<p>The Reserve Bank of Fiji (RBF) is working on a National Payment System reform which will see the implementation of an ATS system which would comprise a real-time gross settlement, an automated clearinghouse and IFT component, and a central securities depository system. The current FijiClear system (real-time gross settlement) would be upgraded and new functionalities added which is expected to bring efficiency into the current payment landscape.</p> <p>There is no domestic private operated payment infrastructure.</p> <p>Bank, debit, and credit cards (Visa and Mastercard) are issued in Fiji.</p>
Payment Services	<p>There are six licensed banks in Fiji (ANZ, Bank of South Pacific, Westpac Banking Corporation, HFC Bank, BRED Bank, Bank of Baroda). There are 10.7 bank branches/offices, 53 automated teller machines, and 790 point of sale terminals per 100,000 people. Banks offer cash services, card issuance, card transactions, and checks.</p> <p>There are two unlicensed nonbank payment service providers in Fiji (Vodafone Fiji's MPaisa and Digicel's MyCash), which offer e-money/e-wallets, merchant acquiring, and card issuance. Nonbank payment service providers are expected to be indirect participants in the new National Payment System.</p> <p>Only commercial banks are entitled to exchange settlement accounts with the RBF. Nonbanks may have accounts for dematerialized securities with the RBF.</p> <p>Cash, bank transfer, debit cards, internet banking, and mobile money (7.9 million transactions in 2021 compared to 4.9 million through direct credit transfers over internet banking in the same period) are the most used retail payment and peer-to-peer money transfer methods.</p> <p>Participation in the international e-money schemes is reliant on local customers having credit card scheme co-badged cards (Visa, MasterCard) to access their services. As long as customers are issued with these badged cards, they could utilize these services. Remittance providers include Western Union and MoneyGram. Other remittance providers provide similar services, but the remittance is integrated into the local e-wallet payment service platform when receiving payments from abroad, for customers subscribed to the e-money and e-wallet service. Ria Money Transfers, Rocket Remit, World Remit, thunes, wise, Orbitremit, KlickEx, Remitly, and Digicel International are examples. Multinational e-money schemes do not have legal presence in the country, for example PayPal, Apple Wallet, etc. Nevertheless, locals are able to make use of these services by linking their credit cards and using international platforms like eBay. Local, closed-loop e-money service providers exist and are operated by Telco's.</p> <p>A review of interchange fees for credit/debit card networks has yet to be conducted. E-money is relatively cost-effective compared to bank accounts.</p>
Digital Identification	There is no digital identification system in place. A total of 29 percent of population lacks a birth certificate.

²⁷ Compiled by Yingqiu Lu (Asia and Pacific Department) and Bo Zhao (Secretary's Department) based on PICs' country survey responses in 2022.

Annex Table 3.1. Fiji (continued)

Category	Description
Central Bank Digital Currency, Crypto Assets, and Stablecoins	The RBF is exploring central bank digital currency. There are no unbacked crypto assets used nor foreign or domestic stable coins used in Fiji. Cryptoasset activities are not regulated or banned.
Legal	<p>Fiji has a currency law that cover both the issuance of currency and legal tender (see https://www.rbf.gov.fj/rbf-act-1985-cap-210/). The National Payment System Act 2021 has not yet commenced (see https://www.parliament.gov.fj/wp-content/uploads/2021/03/Act-4-National-Payment-System-2021.pdf).</p> <p>Whether the current legal framework allows issuing a central bank digital currency is uncertain. The crypto asset service providers, exchanges, or activities are not regulated or banned in Fiji.</p>

Source: IMF staff.

Annex Table 3.2. Kiribati

Category	Description
Currency	Kiribati does not have a central bank nor a national currency. Australian dollars are in use in the country.
Payment Infrastructure	There is no domestic central bank operated payment infrastructure, but the payment system is facilitated via CBRs with ANZ Bank.
Payment Services	There is one licensed bank in Kiribati and there are 10 automated teller machines per 100,000 people.
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There are no unbacked crypto assets used in Kiribati.
Legal	Kiribati does not have a currency law. A supervisory and regulatory framework on payment system and payment services is currently under formulation with the help of IMF technical assistance.

Source: IMF staff.

Annex Table 3.3. Marshall Islands

Category	Description
Currency	Marshall Islands does not have a central bank. US dollars are in use in this country.
Payment Infrastructure	<p>Interbank clearing and settlement is not currently regulated by the banking commission and is highly check-based. Both the Bank of Guam and the Bank of the Marshall Islands voluntarily cooperate to facilitate a manual check clearing process where checks are cleared daily. The payment system is facilitated through the US payment system, via correspondent banking relationships (CBRs) with US banks.</p> <p>Debit cards and credit cards (Visa/Mastercard) are issued in the country.</p>
Payment Services	<p>There are two licensed banks (Bank of Marshall Islands and Bank of Guam, a branch of a US FDIC insured bank), nine bank branches/offices, 10 automated teller machines, and 229 point of sale terminals per 100,000 people. Banks offer cash services, card issuance, card transactions, and checks.</p> <p>There are two remittance providers: Western Union and MoneyGram.</p> <p>The most used retail payment and peer-to-peer money transfer method is bank transfer.</p> <p>The Bank of Marshall Islands is facing pressures related to CBRs, and it has only one US dollar CBR.</p> <p>Costs are high for payments and remittances.</p>
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There are limited unbacked crypto assets used for investment purpose. The government passed a legislation to adopt a private crypto asset (SOV) as the second legal tender in 2018, but the implementation is put on hold. There is a memorandum signed with a private firm Criteo S.A. to set up a National Digital Payment System based on a backed US dollar coin, but progress remains limited so far. It is the first country to approve decentralized autonomous organizations. MIDAO is the domestic registrar for decentralized autonomous organizations.
Legal	Marshall Islands is in the process to establish a monetary authority and has requested technical assistance from the IMF on the legal, policy, and operational framework.

Source: IMF staff.

Annex Table 3.4. Micronesia

Category	Description
Currency	Micronesia does not have a central bank nor national currency. US dollars are in use in the country.
Payment Infrastructure	There is no domestic central bank operated payment infrastructure. The payment system is done through the US payment system under the Compact Agreement.
Payment Services	<p>There are two licensed banks in Micronesia (Bank of Micronesia and Bank of Guam). One is a domestic bank and the other is a US bank branch, both of which are US FDIC insured. There are eight bank branches/offices and 11 automated teller machines per 100,000 people. Banks offer cash services, card issuance, card transactions, checks, and wire transfers.</p> <p>There are several nonbank payment service providers in the country, such as MoneyGram and Western Union, but they are not regulated or supervised by the Micronesia Banking Board.</p> <p>Remittance can be transferred through both banks and nonbank payment service providers.</p>
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There are no unbacked crypto assets and no foreign or domestic stablecoins used in the country.
Legal	<p>Micronesia does not have a currency law.</p> <p>Micronesia has the following: Consumer Protection Act, Bankruptcy ACT, AML/CFT Act, Usury Act and the Bank Act. Since all the banks are US FDIC insured, they must also comply with the US banking and related laws and regulations.</p>

Source: IMF staff.

Annex Table 3.5. Nauru

Category	Description
Currency	Nauru does not have a central bank nor a national currency. Australian dollars are in use in the country.
Payment Infrastructure	There is no domestic central bank operated payment infrastructure.
Payment Services	There is one bank licensed in the country.
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There are no unbacked crypto assets used in the country.
Legal	Nauru does not have a currency law.

Source: IMF staff.

Annex Table 3.6. Palau

Category	Description
Currency	Palau does not have a central bank nor a national currency. US dollars are in use in the country.
Payment Infrastructure	There is no domestic central bank operated payment infrastructure. The domestic private operated payment infrastructure is based on automated clearinghouses by US banks. Debit/credit cards are issued by three US banks.
Payment Services	There are five licensed banks and 40 automated teller machines per 100,000 people in the country.
Digital Identification	The digital identification system was rolled out in 2022.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There is a plan to issue sovereign stablecoins by late 2022 (based on R3 XRP blockchain). There are no unbacked crypto assets used in the country. There is no absolute but implicit ban on crypto assets activities. The Republic of Palau Financial Services Regulation oversees crypto asset activities.
Legal	Palau does not have a currency law. There is a recent Digital Residency Law according to which global citizens can claim a Palauan blockchain digital residency backed by a sovereign entity.

Source: IMF staff.

Annex Table 3.7. Papua New Guinea

Category	Description
Currency	Papua New Guinea's national currency is the Papua New Guinean kina. The exchange rate is de jure floating but de facto stabilized.
Payment Infrastructure	The domestic central bank operated payment infrastructures include Kina Automated Transfer Systems (real-time gross settlement), direct credits, check processing, and Papua New Guinea National Switch (card payment and mobile payment).
Payment Services	There are four banks are licensed in the country (Bank of South Pacific, Westpac, ANZ, Kina Bank). There are 2.46 bank branches/offices, six automated teller machines, and 145.8 point of sale terminals per 100,000 people in the country. Banks offer cash services, card issuance, card transactions, and checks.
Digital Identification	Papua New Guinea has a digital identification system. A recent trial of a digital access tool allows citizens without identification to participate in the banking sector with savings accounts and loans.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	The Bank of Papua New Guinea is not exploring central bank digital currency. There are unbacked crypto assets used in the country. Crypto asset activities are not regulated, and there is no explicit ban on them.
Legal	Papua New Guinea has a currency law, but whether the current legal framework allows issuing a central bank digital currency is uncertain.

Source: IMF staff.

Annex Table 3.8. Samoa

Category	Description
Currency	Samoa's national currency is the Samoan tālā. The exchange rate is based on a conventional peg vis-à-vis a currency composite of currencies of its major trading partners. The share of foreign currency deposit as total deposit is 12.9 percent as of end of 2021.
Payment Infrastructure	The Central Bank of Samoa is in the process of introducing a digital payment system that includes real-time gross settlement, automated clearinghouse, and central securities depository. Visa and Mastercard debit card, Visa, Mastercard, Amex, Diners, and JCB credit cards are issued in the country.
Payment Services	<p>There are four banks licensed in the country (Samoa Commercial Bank, National Bank of Samoa, ANZ, Bank South Pacific). There are 18.4 bank branches/offices, 59 automated teller machines, and 508.5 point of sale terminals per 100,000 people in the country. Banks offer cash services, card issuance, card transactions, and checks.</p> <p>There are 11 money transfer operators for remittances.</p> <p>The jurisdiction is facing pressures related to correspondent banking relationships, and the number of correspondent banking relationships declined in the last several years.</p>
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	<p>The Central Bank of Samoa is not exploring central bank digital currency.</p> <p>There are no unbacked crypto assets and no foreign or domestic stablecoins used in the country. There is no absolute nor implicit ban on crypto asset activities.</p>
Legal	Samoa has a currency law but whether the current legal framework allows issuing a central bank digital currency is uncertain.

Source: IMF staff.

Annex Table 3.9. Solomon Islands

Category	Description
Currency	Solomon Islands' national currency is the Solomon Islands dollar. The de jure exchange rate arrangement is a conventional peg arrangement, while the de facto is a crawl-like arrangement. Solomon Islands dollar is pegged to an invoice-based weighted basket of currencies consisting of US/Australian/New Zealand dollar, Japanese yen, and British pound.
Payment Infrastructure	The central bank is in the process of introducing digital payment system that includes real-time gross settlement, automated clearinghouse, and central securities depository. Debit and debit/credit cards of Visa/Mastercards are issued in the country.
Payment Services	<p>There are four banks licensed in the country (ANZ, Bank South Pacific, Bred Bank, Pan Oceanic Bank). There are 2.14 bank branches/offices, eight automated teller machines, and 46.4 point of sale terminals per 100,000 people in the country.</p> <p>The jurisdiction is facing pressures related to correspondent banking relationships, and the number of correspondent banking relationships declined in the last several years.</p> <p>A mobile wallet product called EziPei was launched in February 2022. While still at an early stage, it holds promise for citizens to send money, receive money, top up airtime, and pay for electricity and water from anywhere using any smartphone or feature phone, and on any network.</p>
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	<p>The Central Bank of Solomon Islands is exploring central bank digital currency.</p> <p>There are unbacked crypto assets used in the country for investment and not regulated by Central Bank of Solomon Islands.</p>
Legal	<p>Solomon Islands has a currency law. The Central Bank of Solomon Islands Act covers both issuance of currency and legal tender, and regulates the payment systems and payment services.</p> <p>There is no data protection law in place.</p>

Source: IMF staff.

Annex Table 3.10. Tonga

Category	Description
Currency	Tonga's national currency is the Tongan pa'anga. The exchange rate is de jure pegged within horizontal bands, but de facto other managed. Tonga is predominantly a cash-based economy.
Payment Infrastructure	Tonga has domestic central bank operated payment infrastructures that include real-time gross settlement, automated clearinghouse, digital check processing, and central securities depository, among others. Debit/prepaid cards are issued in the country.
Payment Services	<p>There are four banks licensed in the country (ANZ, MBF Bank, Tonga Development Bank, Bank of South Pacific Tonga). There are 33 bank branches/offices and 40.5 automated teller machines per 100,000 people in the country. Banks cash services, card issuance, card transactions, and checks.</p> <p>The most used retail payment and peer-to-peer money transfer method currently is through bank transfers. Some financial institutions are licensed for inward and outward remittances.</p> <p>The jurisdiction is facing pressures related to correspondent banking relationships, and the number of correspondent banking relationships declined in the last several years.</p>
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	The National Reserve Bank of Tonga is not exploring central bank digital currency. There are no unbacked crypto assets used in the country.
Legal	<p>Tonga has a currency law that covers both issuance of currency and legal tender.</p> <p>Payment systems and payment services are regulated by specific laws.</p>

Source: IMF staff.

Annex Table 3.11. Tuvalu

Category	Description
Currency	Tuvalu's national currency is the Tuvaluan dollar, but the Australian dollar is de facto in use. Tuvaluan dollar is pegged one-to-one to the Australian dollar.
Payment Infrastructure	There is no central bank or monetary authority and no domestic central bank-operated payment infrastructures.
Payment Services	There are two banks (National Bank of Tuvalu, Development Bank of Tuvalu) and one pension fund (active in lending) licensed in the country. The payment service is cash-based. There is very high need of foreign exchange given the large level of imports and public sector grants received, and foreign exchange service is provided now by National Bank of Tuvalu, which is the only institution in Tuvalu able to conduct international transactions and transmit remittances. The jurisdiction is facing pressures related to correspondent banking relationships.
Digital Identification	There is no digital identification system in place.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	There are no unbacked crypto assets used in the country and no authorities oversee crypto asset activities.
Legal	Tuvalu does not have a currency law. Payment systems and payment services are not regulated.

Source: IMF staff.

Annex Table 3.12. Vanuatu

Category	Description
Currency	Vanuatu's national currency is the Vanuatu vatu. The exchange rate of the vatu is linked to a transaction-weighted (trade and tourism receipts) basket of currencies. A total of 30.8 percent of total deposits was in foreign currency as of the end of 2021.
Payment Infrastructure	Vanuatu is in the process of introducing a digital payment system that includes real-time gross settlement, automated clearinghouse, and central securities depository. Debit and credit cards (Visa and Mastercard) are issued in Vanuatu.
Payment Services	There are five licensed banks in Vanuatu (National Bank of Vanuatu, Wanfuteng Bank, ANZ, Bank of South Pacific, BRED Bank). There are 21 bank branches/offices and 47.6 automated teller machines per 100,000 people. Banks offer cash services, card issuance, card transactions, and checks. There are three licensed nonbank payment service providers in Vanuatu, which provide e-wallets services. The most used retail payment and peer-to-peer money transfer method is bank transfer. e-money schemes include Western Union, MoneyGram, Vodafone, Digicel, and Wantok. Vanuatu is facing pressures related to correspondent banking relationships and has seen a decline in correspondent banking relationships.
Digital Identification	There is no digital identification system in place. A total of 18 percent of population lacks a birth certificate. A national information and communication technology policy is currently being reviewed.
Central Bank Digital Currency, Crypto Assets, and Stablecoins	The Reserve Bank of Vanuatu is exploring central bank digital currency. There are no unbacked crypto assets used in Vanuatu. The Reserve Bank of Vanuatu released a public statement in 2017 that crypto currencies are not a recognized form of legal tender in Vanuatu and that the Reserve Bank of Vanuatu does not support its use. In 2021, the Vanuatu Financial Services Commission amended the Financial Dealers Licensing Act to allow trading in digital assets including crypto assets.
Legal	Vanuatu has a Bill for Central Bank of Vanuatu Act that covers the role of the central bank and the issuance of currency and legal tender (see http://eparliamentresource.gov.vu/jspui/bitstream/1/3125/1/Bill for the Central Bank of Vanuatu Act No.3 of 1980.pdf). It has a Bill for the National Payment System (see https://parliament.gov.vu/images/Bills/2020/2nd_Ordinary/English/Bill_for_the_National_Payment_System_Act_No_of_2020.pdf). Vanuatu has a data protection law in place that addresses data theft and financial fraud.

Source: IMF staff.

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