Financial integration in open, small economies of the South Pacific: Extent, consequences and policy implications

Seruwaia Cagilaba Reserve Bank of Fiji
Kalolaini Ranadi Reserve Bank of Fiji
Victor Wong Griffith University
Eduardo Roca Griffith University
Nirodha Jayawardena Griffith University
Parmendra Sharma Griffith University

**GRIFFITH UNIVERSITY–SOUTH PACIFIC CENTRAL BANKS
JOINT POLICY RESEARCH WORKING PAPER SERIES**

Griffith Asia Institute

Griffith Asia Institute

Financial integration in open, small economies of the South Pacific: Extent, consequences and policy implications

Seruwaia Cagilaba[a], Kalolaini Ranadi[a], Victor Wong[b], Eduardo Roca[b,c], Nirodha Jayawardena[b] and Parmendra Sharma[b,c]

[a]Reserve Bank of Fiji
[b]Department of Accounting, Finance and Economics, Griffith University
[c]Griffith Asia Institute, Griffith University

About the Griffith Asia Institute

The Griffith Asia Institute (GAI) is an internationally recognised research centre in the Griffith Business School. GAI aims to be the informed voice leading Australia's strategic engagement in the Asia Pacific by cultivating knowledge, capabilities and connections that will inform and enrich Australia's Asia-Pacific future.

GAI's focus is on conducting and supporting excellent and relevant research on the politics, security, economies and development of the Asia-Pacific region; facilitating effective partnerships and policy outcomes for positive impact in the region; leading and informing public debate on Australia's place in the Asia Pacific; and shaping the next generation of Asia-Pacific leaders.

The Institute reflects Griffith University's longstanding commitment to the study of and engagement with nations of Asia and the near Pacific.

The Joint Policy Research Working Paper Series endeavours to disseminate the findings of work in progress to academics, governments and the public at large to encourage the exchange of ideas relating to the development of the South Pacific financial sector and thereby national economic growth and development. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors and do not necessarily represent the views of the partner Bank or Government.

The texts of published papers and the titles of upcoming publications can be found on the Institute's website: www.griffith.edu.au/asiainstitute

'Financial integration in open, small economies of the South Pacific: Extent, consequences and policy implications', Griffith University–South Pacific Central Banks Joint Policy Research Working Paper No. 6, 2019.

About the Authors

Seruwaia Cagilaba

Ms Seruwaia Cagilaba is a Business Adviser at Market Development Facility (MDF), Fiji an Australian Government funded private sector development program that operates across 5 different countries. Before joining MDF, Seruwaia worked for 6 years as an Economist at the Reserve Bank of Fiji. She holds a Master of Arts in Policy Economics from Williams College, USA and a Postgraduate Diploma in Economics and Bachelor of Commerce degree in Accounting & Economics from the University of the South Pacific, Fiji. Seruwaia's areas of interest include development economics, macroeconomics, private sector development, and financial sector development.

Kalolaini Ranadi

Ms Kalolaini Ranadi is an Economist at the Reserve Bank of Fiji, with 6 years of experience as a Central Banker. Her areas of research interests include monetary and macroeconomic policy issues and economic developments in the South Pacific, particularly Fiji. Kalolaini holds a Masters degree from Columbia University.

Victor Wong

Dr Victor Wong is a Lecturer in Finance in the Department of Accounting, Finance and Economics at Griffith University. Victor holds numerous academic qualifications including Diploma in Business, Diploma in Higher Education, Graduate Diploma, Bachelor of Arts (with Honours), Master of Commerce and Doctor of Philosophy. Victor has published articles in internationally recognised journals and has obtained research grants from AFAANZ and Griffith University. His primary research interests are in the areas of international portfolio management, international financial markets integration, sustainable finance, socially responsible investments, financial technologies, blockchain, cryptocurrencies and alternative investments.

Eduardo Roca

Professor Eduardo Roca is Head of Discipline, Finance and Financial Planning, at the Department of Accounting, Finance and Economics, Griffith University. Professor Roca obtained his PhD in international finance and has published extensively in the areas of financial market integration, sustainable finance, financial econometrics, risk management and international portfolio diversification in international scholarly journals, including the Journal of International Financial Markets, Institutions and Money, European Journal of Finance, Economic Modelling, Applied Economics, Australian Journal of Management, Journal of Asian Economics. He is currently on the Editorial Board of the Australasian Accounting, Business and Finance Journal and Deakin Business Review.

Nirodha Jayawardena

Dr Nirodha Jayawardena Researcher in the Department of Accounting, Finance and Economics at Griffith University. She recently completed her PhD in Finance at Griffith and completed her Honours degree in Sri Lanka, University of Colombo, specialising statistics. She has also completed CIMA(UK) and CFA level 1 examinations. Nirodha has published three research studies in peer-reviewed journals including Economic Modelling (ABDC rank A). Her research areas are; volatility modelling, applied financial econometrics, and empirical Asset pricing.

Parmendra Sharma

Dr Parmendra Sharma is a senior lecturer and the program convenor of the South Pacific Centre for Central Banking at Griffith University. His publications are beginning to fill the huge vacuum in the literature relating to South Pacific's financial sector, including on issues such as determinants of bank interest margins, profitability and efficiency. His recent publications include Factors influencing the intention to use of mobile value-added services by women-owned micro enterprises in Fiji), Microfinance and microenterprise performance in Indonesia (International Journal of Social Economics), A first look at the trilemma vis-à-vis quadrilemma monetary policy stance in a Pacific Island country context, (Review of Pacific Basin Financial Markets Policy), Mobile value added services in Fiji: Institutional drivers, industry challenges and adoption by women micro entrepreneurs (Journal of Global Information Management) and Bank reforms and Efficiency in Vietnamese Banks: Evidence based on SFA and DEA (Applied Economics).

Contents

Abstract

This is the first study to investigate the extent and magnitude of financial integration in the South Pacific—a region comprising small, open, island economies, heavily bank-dependent for all forms of financial transactions, as well as most vulnerable to internal and external shocks, with constant growth, poverty and inequality challenges. A region also heavily dependent on trade with partners including Australia—the traditional home base as well of the foreign dominated financial system, including New Zealand Banking Corporation Limited (ANZ) and Westpac Banking Corporation limited (WBC). The study applies Autoregressive Distributed Lag (ARDL) co-integration technique on interest rate spreads and covers Fiji, Papua New Guinea, Vanuatu and Tonga, whilst controlling for the effects from Australia and the United States for the period 1992 to 2016. The ARDL results indicate the presence of long-run co-integration relationships among the variables. The estimated short-run impact of interest rate spreads appears in the case of Tonga and Vanuatu—the smallest of the island nations; the larger economies—Fiji and Papua New Guinea—are barely integrated. Explanations, consequences and policy implications are discussed.

Keywords: banking integration, ARDL, PICs, Australia, Papua New Guinea, Fiji, Tonga, Vanuatu

1. Introduction

Despite the abundance of country-specific, cross-country, regional and global literature, the subject of financial integration continues to captivate the interest of scholars and policy-makers alike (Hamid & Lean, 2016; Aziakpono, et al., 2012; Park, 2005). If adequately facilitated, directed and managed, the rewards of integration —such as deepening of markets, efficiency gains, risk management (Eyraud, et al., 2017; Sahay, et al., 2015; Stavarek, et al., 2011; Klein & Olivei, 2005; Levine, 2001)—are likely to outweigh potential drawbacks—such as external shocks and negative growth (Wihardja, 2013; Stavarek, et al., 2011; Kose, et al., 2006; Edison, et al., 2002; Boyd & Smith, 1992). That said, context and circumstances might also play important roles in deliberating on the desired and appropriate trajectory—should there be more integration or less integration. That very question, on the back of the aforesaid background, has encapsulated the minds of a key policy-maker in the South Pacific—a central bank. This question can be answered adequately, however, with a sound understanding also of the extent and magnitude of financial integration in the region, which may also help better understand the likely consequences and provide a policy direction.

The context and circumstances of the South Pacific region are unique, challenging and intriguing. Not only is the region made up of several small, open economies, most countries in turn comprise of numerous islets. Take the case of Fiji, for example, over 300 islands, far-flung and remote make up a population of less than a million. Fiji, on a positive note, is among the most advanced economically and socially—others, such as Vanuatu, are much smaller and relatively underdeveloped. However, growth, poverty, inequality and financial inclusion challenges pervade the entire region. Add to that backdrop the relatively shallow nature of financial markets, bank-centric systems, over-shadowed by foreign subsidiaries, the context and circumstances of largely import-dependent economies become even more intriguing and enthralling. What is the extent and magnitude of financial integration in the region—is it beneficial or harmful—would the region desire more or less integration? International banks do dominate the relatively small, bank-dependent financial systems. Among them, two Australian—Australia New Zealand Banking Corporation Limited (ANZ) and Westpac Banking Corporation limited (WBC)—among the oldest, and for over 150 years in the region. One would expect some form of integration in the banking systems. Australia, together with New Zealand and the United States, also are the main sources of tourism for the region—increasingly a major source of revenue. Plus, foreign direct investment, remittances, trade as well as technical and financial aid.

For instance, tourist arrivals from Australia and New Zealand account for around 60-70 percent of total arrivals in Fiji, Vanuatu and Samoa. Trade with Australia and New Zealand make up around one third of region's total trade (Sheridan et al.,2012). Fiji's combined value of trade with Australia, New Zealand and the United States reached US$997 million in 2006 and rose further to US$1,241 million in 2016. Moreover, Tonga's trade with Australia, New Zealand and the United States was valued at US$68.8 million in 2006 and reached around US$117.7 million in 2016. Remittance inflows to Fiji averaged around US$156 million for the period 1998 to 2016, with Tonga at US$91 million, Vanuatu at US$18 million and Papua New Guinea at US$8 million, respectively. As a share of GDP, Fiji's remittances increased from 1.6 percent in 1998 to 5.8 percent in 2016, Vanuatu from 3.0 percent of GDP in 1998 to 2.4 percent of GDP in 2016 and Tonga from 23.0 percent of GDP in 1997 to 31.5 percent of GDP in 2016. Moreover, foreign direct investment inflows per capita to Fiji averaged at US$104 for the period 1991-1993 and fell to around US$63 for the period 1998-2000. For Vanuatu, foreign direct investment inflows per capita averaged US$164 for the period 1991-1993 and US$94 for the period 1998-2000 (Asian Development Bank, 2006).

In this paper, we will empirically test for financial integration through the banking sector—the first study conducted for PICs. We offer a more robust specification with the inclusion of control variables as well as country specific evidence. The use of Autoregressive Distributed Lag (ARDL) co-integration technique on

interest rate spreads is a preferred co-integration technique because of its robustness that fits well for studies using small sample sizes as it allows the variables to have different optimal lags. The approach is also valid regardless of whether a series is I(0) or I(1) (Peseran and Shin, 2001). Moreover, country specific studies allow one to consider the institutional, structural and policy reform more specifically as it offers more room to discuss the policy implication for the country under study. This paper fills this gap in banking integration in PICs over a span of period between 1992 to 2016.

The structure of the paper are as follows. The next section provides a review of literature. Section 3 gives a background of financial integration in PICs based on qualitative indicators. Section 4 discusses the data used in this study. Section 5 outlines the methods and empirical models. Section 6 discusses the empirical results and provides some policy implications, and Section 7 concludes.

2. Literature Review

Existing empirical studies on financial integration are extensive mostly for developed and emerging market economies. From review of literature, there is no generally agreed upon definition of financial integration. Eyraud, Singh, & Sutton (2017) define financial integration as a process whereby two or more countries financial markets become closely connected with each other. This can occur through foreign banks participation in the domestic financial market, adopting and sharing of ideas and best practices and unifying of market infrastructures. In theory, financial integration is closely linked to the Law of One Price, which states that identical assets with similar risk profiles are priced the same irrespective of where the transactions take place (Martin & Friedrich, 2002; Kleimeier & Sander, 2000; Lean & Hamid, 2016). However, factors such as institutional and regulatory quality, country risk characteristics due to information asymmetry among others can cause segmentation of financial markets and thus limit the Law of One Price to hold in practice.

Similarly, there are no specific measures of financial integration. Baele, Ferrando, Hordahl, Krylova, & Monnet, (2004) outline the use of quantity-based, price-based and news-based measures. Quantity-based measures capture cross-border financial transactions, such as cross-border loans and deposit taking or cross-border mergers & acquisitions. Price-based measures use the Law of One Price while news-based measure gauges how similar banking markets relate to monetary policy news. Specific banking integration measures involve analysing the presence of global and regional branches and subsidiaries in the domestic host countries, cross-border flows and foreign banks' assets to GDP ratio and retail interest rate convergence (Lean & Hamid, 2016).

Based on the notion of price convergence, Lean & Hamid (2016) test the degree and speed of commercial bank interest rate convergence using beta and sigma method, respectively for 5 ASEAN countries (Indonesia, Malaysia, Phillipines, Singapore & Thailand) from 1990 to 2012. The findings reveal that while the level of liquidity and efficiency varied across banks in these countries, the difference and dispersion in interest rates have fallen since the Asian Financial crisis and that interest rates became more converged after the Global Financial Crisis. The study provided evidence of financial integration in the ASEAN banking sector but suggested that adequate regulatory and robust supervisory frameworks are needed.

Affinito & Farabullini (2009) empirically test the validity of Law of One Price in euro-area retail banking. Empirical results on raw interest rate data reveal that the Law of One Price does not hold and that banking markets in the euro-area still appear to be segmented. However, the Law of One Price starts to hold when differences in banking products, customers preferences, risk profiles and demand and supply side characteristics are controlled for. For instance, the authors find that euro-area interest rates tend to equalise when bank customers are able to access better information and gain greater market power. This is largely the case for large businesses relative to small firms, and businesses compared with households. Aziakpono, Kleimeier & Sander (2012) employ the principal component analysis to central bank rates, deposit and loan interest rates to investigate banking market integration in the South African Development Community (SADC) member countries. The authors also test interest rate pass-through from monetary policy rates to domestic retail banking rates on the basis that banking integration may occur through monetary integration. The study found increasing monetary and banking market integration in loan and deposit markets but only in a few SADC member countries.

Muntean (2014) argues that interest rate is a weak measure of banking sector integration as it is influenced by factors like the quality of borrowers, speculative behaviour, government default risk, differing stages of economic cycle and dissimilarities in monetary policy. Instead, the author used lending margins for new loans as a measure of interest rates convergence and found diverse degrees of banking integration in the European Union (EU), in the euro-area and non-euro member states. Specific-country analysis also showed

banks in more stable and developed economies converging to the EU level although this was impacted by the financial crisis. Moreover, Kleimeier & Sander (2000) employed cointegration test on monthly lending rates and spreads to analyse financial integration for six European countries (France, Germany, UK, Netherlands, Belgium and Italy), including Japan and the United States. The results reveal limited degree of integration during the period January 1985 to December 1990, while it weakened after the period 1992. In assessing financial integration in Asia, Ananchotikul, et al. (2015) find that the level of financial integration remains low within the region relative to trade integration. This outcome is partly explained by the strong preference of private investors to invest their financial savings in the domestic market. Empirical results of the gravity model also confirm the importance of trade, capital account openess and advances in financial system in strengthening bilateral financial integration. Moreover, removing barriers such as information asymmetries, entry of foreign banks, limits on cross-border capital flows and differences in regulatory policies should foster greater financial integration. The paper also highlighted that prudent supervision and regulation and improving international cooperation policy will help mitigate risks to financial and macroeconomic stability given the presence and participation of foreign banks and growth in the financial markets. Espinoza & Kwon (2009) and Howard & Craigwelll (2010) in using equity prices and macroeconomic data in the Caribbean, found low levels of financial integration in the region, partly attributed to illiquidity, inefficiency and the shallow nature of financial markets, information asymmetry and insitutional barriers.

To shed light on how foreign banks impact the effectiveness of monetary policy via the bank lending channel, Jeon & Wu (2013) find that foreign banks in the seven emerging market Asian economies were less sensitive to changes in domestic monetary policy than local banks and therefore slower in adjusting their loans growth. Also, the diminishing impact on monetary policy was more prominent in the Global Financial Crisis period as opposed to the earlier Asian Financial crisis. In a similar vein, Galindo, Izquierdo, & Rojas-Suarez (2013) conclude that in the absence of adverse external shocks, financial integration contributes to deepening of credit markets and lowering of interest rates. On the downside, it is also a source of risk given the tranmission of adverse external shocks to the local economy leading to contractions in credit growth and interest rate hikes. In addition, the impact of international financial shocks on real interest rates and credit growth tend to be exacerbated by the presence and increased participation of foreign banks in Latin America. However, the authors concluded that the benefits of financial integration tend to outweigh the costs.

Fiala & Havranek (2016) in assessing the risk of contagion from foreign owned banks to domestic banks in Central and Eastern Europe, find that the probability of a bank default due to failure of a foreign bank was 5 percent, while the likely impact of a local bank failure causing another local bank to fail was 10 percent. The results imply that foreign owned banks do not significantly add to the systematic risk of the local banking sector. Moreover, Fecht, Gruner & Hartmann (2012) find that while the probability of financial crises was reduced through financial integration, the risk of contagion and widespread banking failures tends to increase as well. As such, policy makers should improve their supervisory role to safeguard financial stability. Bai & Zhang (2012) also argue that factors such as incomplete financial contracts and limited enforceability restricts capital flows to countries, which therefore reduces international risk sharing.

Relevant studies that exist for PICs are limited. Sheridan, et al. (2012) provides evidence of increasing regional integration between PICs and economies such as Australia, New Zealand and emerging Asia. Direct spillovers to PICs in the short and long term are mostly from Australia, and indirectly through New Zealand. Spillovers from the United States due to large aid flows are also important for Marshall Islands, Micronesia and Palau. Stress in the financial system due to a fall in stock prices would impact countries such as Kiribati, Marshall Islands, Micronesia, Tuvalu and Palau given the offshore investments of its provident and trust funds assets. Also, fall in remittances and tourism earnings would affect the quality of loans, banks' profitability and liquidity. In this regard, the authors suggested that structral reforms and policy buffers should continue in PICs to guarantee sustained and inclusive growth. Jamaludin, et al. (2015) examine the determinants of lending and interest rate spreads for Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu for the period 2001 to 2013. Based on the results of the study, Gross Domestic Product (GDP), inflation, quality of bank balance sheets and banking sector concentration were found to be

statistically significant in explaining interest rate spreads. The size of the economy measured by GDP, is expected to reduce spreads as countries with higher level of economic development are able to achieve economies of scale and also explore opportunities for diversification. Higher inflation will cause banks to raise spreads in order to compensate for the reduction in real value of interest margins, while increased bank competition reduce spreads. The strength of contract enforcement was also found to have an impact on spreads. Macroeconomic instability and uncertainty due to unfavourable weather conditions contribute to higher interest rate spreads. The study recommended policies to improve collateral administrations, property rights, contract enforcement and increasing banking competition.

In a similar paper, Davies & Vaught (2011) highlight that factors such as capital & exchange controls, inflation, specific country risks owing to political instability, natural disasters and social unrest affect the level of interest rates in PICs. Furthermore, interest rates are also influenced by the depth of financial markets and quality of regulatory and legal institutions (credit reporting bureaus, enforcement contracts and bankruptcy laws). Nonetheless, the soundness and profitability of banks in PICs have enabled them to withstand shocks such as the Global Financial Crisis without any major impact on its financial system. This success is in part contributed by the presence of Australian banks as they were able to withstand the crisis better than other international banks. The strong positions of these Australian foreign parent banks would also ensure that timely support are provided to its branches or subidiaries in case they incur losses or need to be recapitalised.

3. Background on Financial Integration in the South Pacific

Qualitative Evidence of Financial Integration

We use commonly used qualitative indicators to evaluate the degree of banking integration among our sample of countries. Similar to Herrero & Wooldridge (2007) and Fakhr & Tayebi (2009), the process of financial integration can occur through trade integration and cross-border financial activities such as foreign direct investment and portfolio investment flows. Amongst the PICs, geographical proximity and shared cultural preferences could influence financial integration. Moreover, foreign banks participation in the domestic financial sector can contribute to financial integration amongst countries that depend on each other for trade (Eyraud et.al., 2017; Galindo et.al., 2013; Muntean, 2014; Saab & Vacher, 2017).

Foreign Banks Presence in PICs

Studies have discussed that foreign banks participation in the domestic financial sector encourages competition and efficiency. This in turn leads to lower lending rates and higher deposit rates and thus contributes to financial integration (Galindo et.al, 2013). Additionally, the presence of foreign banks should result in an increase in cross-border activity and harmonise banking behaviour (Affinito & Farabullini, 2009). In our study, there is clear evidence (Table 1) that foreign banks, especially those of Australian origin have a substantial presence in PICs and that the same Australian banks operate across these countries.

Most of the foreign banks have established foreign subsidiaries (*highlighted in grey* in Table 1) rather than foreign branches, which in part reflects the quality of institutions and tax regulations in the host countries. In Fiji, most of the foreign banks operate as branches rather than subsidiaries possibly due to a more stable and developed financial and macroeconomic environment. Therefore, it is not surprising that the foreign branches of Australian banks in Fiji are considered as Systemically Important Financial Institutions as they account for a significant share of the domestic financial sector. Anecdotal evidence also indicate that foreign banks have gained entry into Fiji, Vanuatu and Tonga through mergers or acquisitions of existing local banks, which are the most effective way of penetrating the retail banking sector (Saab & Vacher, 2017). For instance, Bank of the South Pacific as part of its expansion plans in the Pacific acquired Westpac businesses in Cook Islands, Samoa, Solomon Islands and Tonga in 2015. In addition, ANZ bank also acquired operations of Barclays and Grindlays banks (1985), Bank of New Zealand (1990) and Bank of Hawaii (2002) in Fiji.

Table 1: Foreign Banks Presence in PICs

Countries	Australian Banks	Other Banks	Domestic Banks
Fiji	ANZ Westpac	Bank of Baroda (India) Bank of the South Pacific (PNG) Bred Bank (Banque Populaire, France)	Home Finance Company (HFC)
Papua New Guinea	ANZ Westpac	Maybank (Malaysia)	Bank of the South Pacific Kina Bank
Vanuatu	ANZ	Bred Bank (Banque Populaire, France) Bank of the South Pacific (PNG)	National Bank of Vanuatu
Tonga	ANZ	Bank of the South Pacific (PNG)	Mbf Bank
Countries	Australian Banks	Other Banks	Domestic Banks

Data Sources: Country's Central Banks, Jamaludin, Sheridan, Tumbarello & others (2016).

Global Trade Integration in PICs

Trade between PICs and traditional trading partners such as Australia, New Zealand and the United States has been increasing over the years. Moreover, PICs trade with Asian economies particularly with China has gained prominence in recent years. Undoubtedly, trade integration provides an important link towards financial integration in the PICs. Studies have argued that trade integration has a positive and significant effect on financial integration, as trade-related finance and export insurance transactions are captured in cross-border flows and help to reduce transaction costs and information asymmetries (Aviat & Nicolas, 2007; Lane & Ferretti, 2005). Data indicates that over the past decade, Australia and the United States remained among the top global trading partners of PICs and that the magnitude of trade has increased. For instance, as depicted in Figure 1, Fiji's export value to Australia grew from US$117.8 million in 2006 to US$138.9 million in 2016. In addition, Fiji's export value to the United States increased substantially from US$98.1 million in 2006 to US$167.4 million in 2016. The stronger trade linkages between PICs and Australia, New Zealand and the United States has been facilitated by the presence of the same Australian banks, which may have contributed to banking sector integration in PICs.

Figure 1: Global Trade Integration in PICs

Fiji's Export Destinations to Advanced Economies

2006

	USD Millions
AUSTRALIA	117.8
UNITED STATES	98.1
UNITED KINGDOM	75.5
JAPAN	55.1
NEW ZEALAND	39.8

2016

	USD Millions
UNITED STATES	167.4
AUSTRALIA	138.9
NEW ZEALAND	65.0
CHINA, P.R.MAINLAND	47.6
UNITED KINGDOM	34.8

Fiji's Sources of Imports from Advanced Economies

2006

	USD Millions
SINGAPORE	621.4
AUSTRALIA	403.8
NEW ZEALAND	287.0
CHINA, P.R MAINLAND	64.8
JAPAN	64.5
UNITED STATES	50.6

2016

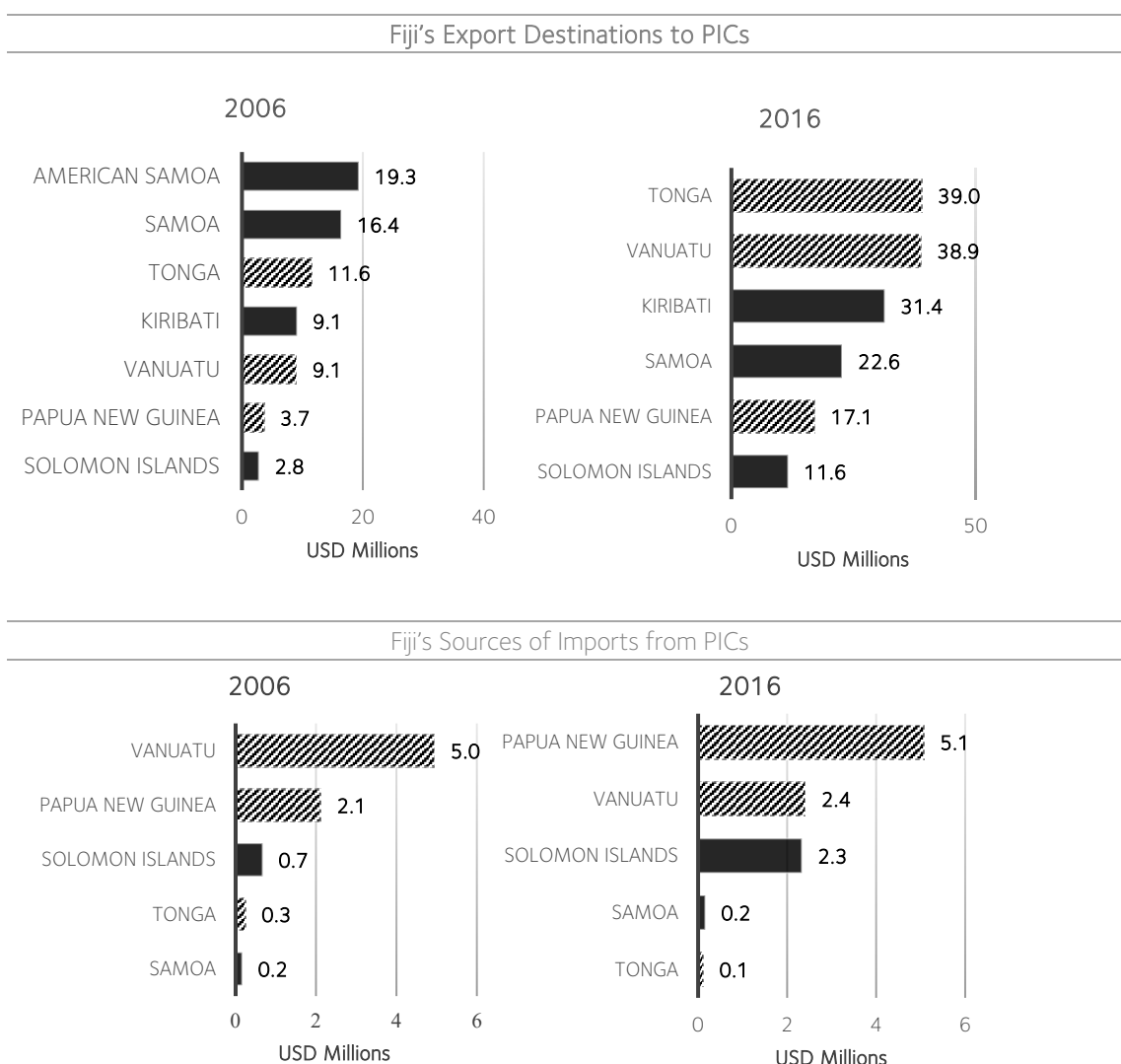|	USD Millions
NEW ZEALAND	403.5
AUSTRALIA	402.1
SINGAPORE	356.1
CHINA, P.R MAINLAND	355.2
JAPAN	159.0
UNITED STATES	64.7

Data Source: Direction of Trade Statistics, IMF

Note: Countries in our study sample are shaded in pattern.

PICs Trade Integration with Fiji

Studies such as, Park, 2005; Tayebi & Fakhr, 2009 have shown that regional trade integration also contributes to financial integration as it provides an indication of the degree of real and financial convergence among countries in the same region. It is evident that PICs have become increasingly integrated with Fiji through trade over the past decade as depicted in Figure 2. The evidence confirms that Tonga, Vanuatu and Papua New Guinea are among Fiji's top trading partners in the Pacific and through these strong trade links there is a possibility that banking integration may have occurred. Additionally, foreign banks are conduits for cross-border trade and financial activity, so the significant presence of the same foreign banks in these PICs may have strengthened regional trade and possibly led to the integration of their banking sectors.

Figure 2: PICs Trade Integration with Fiji

Fiji's Export Destinations to PICs

2006

AMERICAN SAMOA	19.3
SAMOA	16.4
TONGA	11.6
KIRIBATI	9.1
VANUATU	9.1
PAPUA NEW GUINEA	3.7
SOLOMON ISLANDS	2.8

USD Millions

2016

TONGA	39.0
VANUATU	38.9
KIRIBATI	31.4
SAMOA	22.6
PAPUA NEW GUINEA	17.1
SOLOMON ISLANDS	11.6

USD Millions

Fiji's Sources of Imports from PICs

2006

VANUATU	5.0
PAPUA NEW GUINEA	2.1
SOLOMON ISLANDS	0.7
TONGA	0.3
SAMOA	0.2

USD Millions

2016

PAPUA NEW GUINEA	5.1
VANUATU	2.4
SOLOMON ISLANDS	2.3
SAMOA	0.2
TONGA	0.1

USD Millions

Data Source: Direction of Trade Statistics, IMF

Note: Countries in our study sample are shaded in pattern.

Cross-Border Financial Flows in PICs

Literature suggests that it is not only the growing existence of cross-border financial groups in the domestic economy but the presence of cross-border financial activity that encourages financial integration amongst countries (Eyraud et.al., 2017; Muntean, 2014). Within the past 18 years, the bulk of foreign direct and portfolio investments in PICs have been directed towards Fiji and Papua New Guinea, which reflects their larger economies and more developed financial sectors as reported in Table 2 and Table 3. Data also indicate that Australia and the United States are among the largest sources of foreign direct investment flows into Fiji, Papua New Guinea, Tonga and Vanuatu (United Nations Conference on Trade and Development, 2018). However, evidence indicates that while there has been more foreign bank participation in PICs, this has not been followed by a drastic increase in cross-border financial activity.

Table 2: Inward and Outward Foreign Direct Investment (FDI) Stock (US$ Millions)

	Fiji		*Papua New Guinea*		*Vanuatu*		*Tonga*	
	Inward FDI stock	Outward FDI stock	Inward FDI stock	Outward FDI stock	Inward FDI stock	Outward FDI stock	Inward FDI stock	Outward FDI stock
1992	61.6	6.72	267.8	1.45	30.1	0.00	0.02	0.00
1993	64.8	0.45	250.9	10.28	30.3	0.00	0.01	0.00
1994	90.9	1.09	247.7	0.09	34.6	0.00	0.00	0.00
1995	83.6	4.84	408.9	3.93	35.5	0.00	...	...
1996	81.9	5.56	369.6	0.08	30.7	...	...	...
1997	90.8	5.06	248.2	0.90	28.6	...	...	...
1998	103.0	5.39	176.2	0.78	20.5	...	...	...
1999	71.9	6.65	239.4	5.42	13.7	...	...	...
2000	7.5	3.73	197.7	1.19	21.9	...	...	...
2001	57.9	2.73	205.7	1.59	14.0	...	...	...
2002	53.9	1.81	217.5	7.34	18.1	0.58	0.27	0.18
2003	85.2	3.90	443.0	6.90	20.8	0.71	0.87	0.51
2004	140.9	3.75	400.4	2.17	27.1	0.81	0.37	0.00
2005	132.8	5.83	510.9	0.87	35.3	0.81	0.00	0.00
2006	163.1	2.19	814.6	2.13	34.2	0.79	0.00	0.00
2007	127.1	1.23	673.7	2.87	45.6	0.67	0.00	...
2008	122.3	1.22	610.6	1.96	29.7	1.35	0.00	0.00
2009	48.0	2.99	536.6	7.84	41.7	1.38	0.00	0.00
2010	143.4	5.72	465.9	14.05	51.8	1.32	0.02	0.00
2011	171.2	2.12	350.2	2.02	53.4	1.34	7.64	...
2012	168.2	1.40	565.9	3.22	75.4	1.08	6.89	0.00
2013	122.3	3.90	391.1	2.63	29.0	1.06	6.83	1.15
2014	230.2	0.00	209.5	4.71	27.9	1.07	11.62	...
2015	209.1	0.00	256.9	4.91	25.1	1.45	14.53	0.61
2016	127.1	0.00	156.8	2.16	...	...	1.88	0.53

Data Source: IMF Balance of Payments and International Investment Position Statistics... indicates missing data

Table 3: Inward and Outward Portfolio Investment Stock (PI) (US$ Millions)

	Fiji		Papua New Guinea		Vanuatu		Tonga	
	Inward PI stock	Outward PI stock	Inward PI stock	Outward PI stock	Inward PI stock	Outward PI stock	Inward PI stock	Outward PI stock
1992	0.00	0.00	...	...	...	...	...	...
1993	0.00	0.00	...	...	...	...	...	...
1994	0.00	0.00	...	...	...	...	...	...
1995	0.00	0.00	...	...	...	...	...	...
1996	0.00	0.00	...	...	...	...	...	...
1997	0.00	0.00	...	...	...	...	...	...
1998	0.00	0.00	...	0.00	0.70	...	...	...
1999	...	...	3.42	0.00	1.27	...	...	...
2000	5.46	7.34	10.10	0.00	1.05	...	...	...
2001	4.09	7.20	5.77	0.00	0.30	0.00	...	...
2002	4.35	1.84	19.97	0.00	0.69	0.00	...	0.00
2003	5.12	7.65	6.37	0.00	0.33	0.00	0.00	0.00
2004	8.23	4.86	16.04	0.00	0.30	0.00	0.00	0.00
2005	9.77	0.88	24.08	0.00	0.37	0.00	0.00	0.00
2006	12.56	0.86	67.20	0.00	0.47	0.00	...	0.00
2007	3.04	10.52	99.31	0.00	0.52	0.00	...	...
2008	6.37	10.50	80.78	0.00	0.11	0.00	...	...
2009	2.92	9.52	35.86	0.00	2.24	0.00	...	...
2010	0.98	10.45	24.60	0.00	2.06	...	...	...
2011	6.07	21.61	27.63	0.00	2.05	...	...	...
2012	0.00	22.40	29.61	0.00	0.81	...	...	...
2013	3.43	22.59	22.41	0.00	0.17	...	0.00	...
2014	0.00	22.51	2.36	0.00	...	...	...	...
2015	0.00	22.94	1.63	0.00	...	...	...	0.19
2016	...	...	0.48	...	...	...	...	0.17

Data Source: IMF Balance of Payments and International Investment Position Statistics ...Indicates missing data

4. Data

Our study uses annual data for the period 1992 to 2016 for four PICs—Fiji, Papua New Guinea, Tonga and Vanuatu together with Australia as the parent bank country, and the United States as a proxy for the global financial sector based on data availability and reliability. More importantly, these countries hold close trade and financial ties with each other. Our data sources include the World Bank Development Indicators, International Financial Statistics (IMF), Reserve Bank of Fiji and the Federal Reserve Bank of Saint Louis. A detailed list of our data sources is tabled in Appendix 1. Similar to Vacher & Saab (2007), we use interest rate spreads calculated as the difference between the lending interest rate and deposit rate as a measure of banking integration, with the exception of the United States where we use the Treasury-Euro Dollar (TED) rates due to data limitations.[1] Retail interest rates has been argued to be a useful measure of financial integration as it indicates the influence of regional, national or common factors on prices (Kleimeier & Sander, 2007). We also include deterministic regressors as control variables to help explain banking integration amongst our sample of countries. From other empirical studies (Albulescu, 2011; Garali & Othmani, 2015; Ryan & Horsewood, 2009), macroeconomic stability such as improvements in economic growth, price stability, trade and financial openness contribute to financial integration. In our model, economic growth measured using the annual percent change in real GDP indicates the capacity of each country to influence financial integration, similar to (Tayebi & Fakhr, 2009). Price stability was measured using the annual percent change in the Consumer Price Index. Financial openness was measured using foreign direct investment inflows as a percent of GDP.

---

[1] The TED series is calculated as the difference between the 3-month LIBOR (in US dollar) and the 3-month Treasury bill.

5. Methodology

Testing Co-integration

Granger (1981) and, Engle and Granger (1987) are the first to formalise the idea of co-integration, providing tests and estimation procedure to evaluate the existence of long-run relationship between set of variables within a dynamic specification framework. Economic analysis suggests that there is a long run relationship between variables under consideration as stipulated by theory. This means that the long run relationship properties are intact. In other words, the means and variances are constant and not depending on time. Once variables are classified as integrated of order I(0), I (1) etc. it is possible to set up models that leads to stationary relations among the variables. The criteria for stationary among non-stationary variables are called co-integration. In applied econometrics, Granger (1981) and, Engle and Granger (1987), Autoregressive Distributed Lag (ARDL) co-integration technique or bound test of co-integration by Pesaran & Shin, 1999, Pesaran et al., 2001, Johansen & Juselius, 1990, techniques are the prominent solutions in determining the long run relationship between non-stationary series.

Empirical Estimation Method

This paper follows the ARDL testing approach to co-integration developed by Peseran et al. (2001) to examine the long run and short run banking integration in PICs. ARDL method is preferred over other co-integration techniques such as Johansen Co-integrating models because of certain strengths in this approach. Firstly, the short and long run parameters are estimated simultaneously. Secondly, it can be applied irrespective of whether the variables are integrated of order zero I(0) or integrated of order one I(1). Thirdly, ARDL approach has better small sample properties (Smyth and Narayan, 2004). The ARDL framework for Fiji in Eq. [1] is as follows:

$$\Delta IRS_{Fiji,t} = a_1 + \gamma_1 IRS_{Fiji,t-1} + \gamma_2 IRS_{PNG,t-1} + \gamma_3 IRS_{TON,t-1} + \gamma_4 IRS_{VAN,t-1} + \gamma_5 IRS_{AUS,t-1} + \gamma_6 IRS_{US,t-1} + \gamma_7 IRS_{CPI,t-1} + \gamma_8 IRS_{GDP,t-1} + \gamma_9 IRS_{FDI,t-1} + \sum_{i=1}^{p} \varepsilon_i \Delta IRS_{Fiji,t-i} + \sum_{i=1}^{p} \mu_i \Delta IRS_{PNG,t-i} + \sum_{i=1}^{p} \sigma_i \Delta IRS_{TON,t-i} + \sum_{i=1}^{p} \tau_i \Delta IRS_{VAN,t-i} + \sum_{i=1}^{p} \varphi_i \Delta CPI_{t-i} + \sum_{i=1}^{p} \omega_i \Delta GDP_{t-i} + \sum_{i=1}^{p} \partial_i \Delta FDI_{t-i} + \varepsilon_t \qquad [1]$$

In the above ARDL model for Fiji interest rate spreads, the terms with the summation sign represent the error correction dynamics while the term with γ corresponds to the long run relationship. The null hypothesis in Eq. [1] is $\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = \gamma_7 = \gamma_8 = \gamma_9 = 0$ which indicate the non-existence of the long run relationship (or no banking integration).

For the other PICs their respective ARDL models are:

$$\Delta IRS_{PNG,t} = a_1 + \gamma_1 IRS_{PNG,t-1} + \gamma_2 IRS_{FIJI,t-1} + \gamma_3 IRS_{TON,t-1} + \gamma_4 IRS_{VAN,t-1} + \gamma_5 IRS_{AUS,t-1} + \gamma_6 IRS_{US,t-1} + \gamma_7 IRS_{CPI,t-1} + \gamma_8 IRS_{GDP,t-1} + \gamma_9 IRS_{FDI,t-1} + \sum_{i=1}^{p} \varepsilon_i \Delta IRS_{Fiji,t-i} + \sum_{i=1}^{p} \mu_i \Delta IRS_{PNG,t-i} + \sum_{i=1}^{p} \sigma_i \Delta IRS_{TON,t-i} + \sum_{i=1}^{p} \tau_i \Delta IRS_{VAN,t-i} + \sum_{i=1}^{p} \varphi_i \Delta CPI_{t-i} + \sum_{i=1}^{p} \omega_i \Delta GDP_{t-i} + \sum_{i=1}^{p} \partial_i \Delta FDI_{t-i} + \varepsilon_t \qquad [2]$$

$$\Delta IRS_{TON,t} = a_1 + \gamma_1 IRS_{TON,t-1} + \gamma_2 IRS_{PNG,t-1} + \gamma_3 IRS_{FIJI,t-1} + \gamma_4 IRS_{VAN,t-1} + \gamma_5 IRS_{AUS,t-1} + \gamma_6 IRS_{US,t-1} + \gamma_7 IRS_{CPI,t-1} + \gamma_8 IRS_{GDP,t-1} + \gamma_9 IRS_{FDI,t-1} + \sum_{i=1}^{p} \varepsilon_i \Delta IRS_{Fiji,t-i} + \sum_{i=1}^{p} \mu_i \Delta IRS_{PNG,t-i} + \sum_{i=1}^{p} \sigma_i \Delta IRS_{TON,t-i} + \sum_{i=1}^{p} \tau_i \Delta IRS_{VAN,t-i} + \sum_{i=1}^{p} \varphi_i \Delta CPI_{t-i} + \sum_{i=1}^{p} \omega_i \Delta GDP_{t-i} + \sum_{i=1}^{p} \partial_i \Delta FDI_{t-i} + \varepsilon_t \qquad [3]$$

$$\Delta IRS_{VAN,t} = a_1 + \gamma_1 IRS_{VAN,t-1} + \gamma_2 IRS_{PNG,t-1} + \gamma_3 IRS_{TON,t-1} + \gamma_4 IRS_{FIJI,t-1} + \gamma_5 IRS_{AUS,t-1} +$$
$$\gamma_6 IRS_{US,t-1} + \gamma_7 IRS_{CPI,t-1} + \gamma_8 IRS_{GDP,t-1} + \gamma_9 IRS_{FDI,t-1} + \sum_{i=1}^{p} \varepsilon_i \Delta IRS_{Fiji,t-i} +$$
$$\sum_{i=1}^{p} \mu_i \Delta IRS_{PNG,t-i} + \sum_{i=1}^{p} \sigma_i \Delta IRS_{TON,t-i} + \sum_{i=1}^{p} \tau_i \Delta IRS_{VAN,t-i} + \sum_{i=1}^{p} \varphi_i \Delta CPI_{t-i} +$$
$$\sum_{i=1}^{p} \omega_i \Delta GDP_{t-i} + \sum_{i=1}^{p} \partial_i \Delta FDI_{t-i} + \varepsilon_t \qquad [4]$$

Eq. [2] — Eq. [4] represents the ARDL models for PNG, Tonga and Vanuatu, respectively. The ARDL method estimates $(p + 1)^k$ number of regressions to obtain the optimal lags for each variable, where p is the maximum number of lags to be used and k is the number of variables in the equation. The optimal model is selected using the model selection criteria like Schwartz-Bayesian Criteria (BIC) in the study.

6. Results

Test for stationary and order of integration

The first step of the co-integration analysis is to determine the order of integration of the time series. We conduct Augmented Dickey-Fuller (ADF) test to check the order of integration of the interest rate spreads. The ADF tests for the null hypothesis of whether a variable *has a unit root*. Table 4 below reports the ADF test statistics conducted in levels and in first differences. We find that except for Vanuatu, the interest rates spread of the other countries are non-stationary at levels. However, at first difference, we find that all the countries interest rates spread are stationary and thus integrated of order 1, i.e., $I(1)$.

Table 4: Unit Root Tests

Variables	Level data	First difference data	Variables	Level data	First difference data
Fiji IRS	–1.9484	–3.039*	Vanuatu IRS	–7.1675**	–3.9567*
FDI inflows	–1.7492	–3.1493*	FDI inflows	–2.0162	–3.2244*
CPI	–2.4312	–3.7367**	CPI	–2.8842	–3.2056*
GDP growth	–2.5719*	–4.3308**	GDP growth	–2.1343*	–2.6746*
PNG IRS	–1.8191	–2.3338*	Tonga IRS	–2.1123	–2.5677*
FDI inflows	–6.0037**	–9.6748*	FDI inflows	–2.2458	–3.3150*
CPI	–3.2176	–3.8633**	CPI	–1.4351	–2.4220*
GDP growth	–4.1036*	–3.4825*	GDP growth	–3.1181*	–3.9638**
US IRS	–2.5864	–3.0074*	Australia IRS	–2.4699	–3.5244*

Notes: Hypotheses: $H_0: IRS_t \sim I(1), H_0: IRS_t \sim I(0),$; the lag length is determined using Akaike information criteria; the asterisks show the significance level at 5%** and 10%. *

Correlation and co-efficient diagnostic tests

It is intuitive to see from Figure 3 that apart from Fiji, interest rate spreads of other PICs have relatively similar patterns of movement with Australia and the United States and that the co-movement appears to have decreased over time.

Figure 3: Interest rate spread movements of the country's 1992-2017
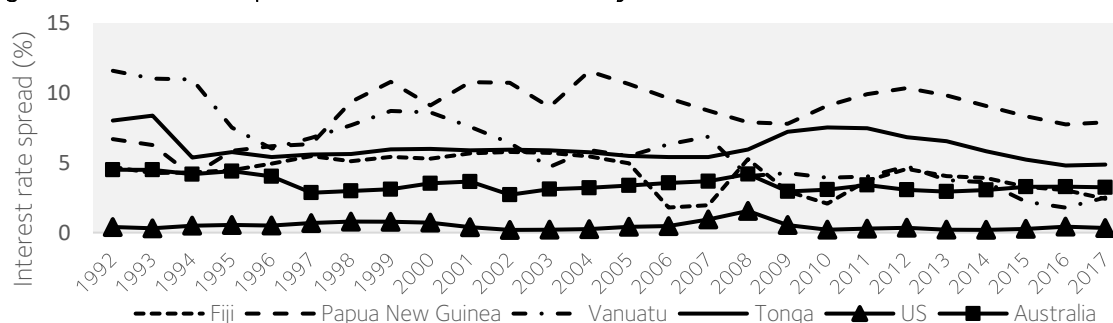
Data source: World Bank Development Indicators

Correlation tests are performed to check the correlation between the interest rates spreads in our sample. Table 5 reports that there exist a high pair-wise correlation between the interest rates spreads of Australia and Vanuatu, Australia and Papua New Guinea.

Table 5: Correlation matrix of the interest rates spread

	Fiji	PNG	Vanuatu	Tonga	US	Australia
Fiji	1.0000	0.1390	0.3755	0.0023	0.1179	0.0207
PNG	0.1390	1.0000	–0.3155	–0.0232	–0.1914	–0.6049
Vanuatu	0.3755	–0.3155	1.0000	0.3203	0.1636	0.5592
Tonga	0.0023	–0.0232	0.3203	1.0000	–0.2037	0.2170
US	0.1179	–0.1914	0.1636	–0.2037	1.0000	0.2983
Australia	0.0207	–0.6049	0.5592	0.2170	0.2983	1.0000

Financial Integration Model

Although pre-testing for non-stationarity of the series is not necessary for the ARDL model, we still conducted the test to make sure that none of series is I (2) or higher in which case it can complicate the F-test (Ouattara, 2004). The banking integration of PICs are investigated through the ARDL testing approach to co-integration using Eqs. [1] — [4]. The results are reported in Table 6.

Table 6: Banking Integration in PICs– Long-run and Short-run results

Dependent variable:	$\Delta IRS_{Fiji,t}$	$\Delta IRS_{PNG,t}$	$\Delta IRS_{Tonga,t}$	$\Delta IRS_{Vanuatu,t}$
Panel A: Long-run results				
Fiji_IRS		0.7663***	–10.5688**	2.2133***
PNG_IRS	0.4511***		5.7265**	–0.7671***
Vanuatu_IRS	–0.4603***	0.0472*	–5.0039**	
Tonga_IRS	2.2925***	0.9915***		0.3715
US_IRS	2.0560***	0.5921**	158.5617**	–11.1482***
AUS_IRS	0.9036***	–2.9913***	–29.2840**	12.7822***
Price stability	–0.0820**	–0.1387***	5.4033**	0.0500
GDP growth	0.0322	–0.1609***	1.3648**	–0.4945***
Financial openness	–0.6192***	–0.1446***	–13.8526**	0.0331
Panel B: Short-run results				
Constant	–4.8245***	6.3831***	0.5397***	7.4824**
L(Δh_IRS)	0.1696	–0.1346	–0.2541	–0.2713
ΔFiji_IRS		0.3314	–0.1439	–0.5083**
ΔPNG_IRS	0.3326**		0.1519*	0.5467**
ΔVanuatu_IRS	–0.2928**	0.0085	–0.3350***	
ΔTonga_IRS	0.5418**	0.8522*		–1.1471**
ΔUS_IRS	4.2516***	0.3987	0.8435	1.8411
ΔAUS_IRS	–0.1172	0.0229	–0.5900*	–2.5613***
ΔPrice stability	0.0062	–0.1002	0.0489	–0.0585
ΔGDP growth	0.0317	–0.0098	–0.0223	0.1129
ΔFinancial openness	–0.1953***	–0.0091	–0.0259	0.0171
ECM_{t-1}	–0.4268***	–0.5617***	–0.0168***	–0.0222**
R–squared	0.9781	0.9642	0.9972	0.9909
F statistic	15.7900	9.5070	75.8500	38.4700

Significance levels: *: 10%, **: 5%, ***: 1%

The long run test statistics are reported in Table 6. Panel A reveal that for Fiji, Papua New Guinea and Tonga interest spread of other PICs together with Australian and United States interest rate spreads are long run forcing variables. However, in Vanuatu, other than the interest spreads in Tonga, all other PIC's interest rate spread together with Australian and United States rates are long run forcing variables. The short run dynamics of the model are shown in Table 6 Panel B. For the case of Fiji and Papua New Guinea it can be seen that Australian interest rate spreads, price stability, GDP growth and financial openness are not statistically significant. However, for the smallest of the island nations — Tonga and Vanuatu, there is a significant influence from Australia.

The coefficient of error correction term (ECM) is found to be negative for all PICs. It demonstrates that there is a long run relationship between the study variables. The coefficient of the ECM term -0.4268, -0.56176, -0.016875 and -.222 in Fiji, Papua New Guinea, Tonga and Vanuatu respectively, demonstrate that there is a reasonable adjustment process to the equilibrium. Nearly 43% of Fiji, 56% of Papua New Guinea, 2% of Tonga and Vanuatu disequilibria of the previous year's shock adjust back to the long run equilibrium in the current year.

7. Discussion and Policy Implications

The co-integration results show evidence of long run relationship amongst the PICs and with United States and Australia. Specifically, Fiji is integrated with Papua New Guinea, Vanuatu, Tonga, Australia and the United States in the long run, partly explained by the strength of trade relationships between Fiji and these countries, as well as financial links established through the presence of the same Australian banks. Price stability and financial openness also have an influence on financial integration in Fiji, Papua New Guinea and Tonga in the long run, except for Vanuatu.

In the short run, some interesting results also stood out. These include:

- Fiji and Vanuatu are the most integrated with other countries. Fiji is integrated with the rest of the PICs and the United States, except for Australia. This is not surprising as Fiji is considered well developed economically and socially relative to other PICs and given the financial and trade relationships it shares with these countries. Vanuatu is integrated with the rest of the PICs and Australia, except for the United States, possibly explained by the absence of exchange controls, which allows free movements of cross-border financial flows.

- The smaller economies - Vanuatu and Tonga are influenced by Australia in the short run compared to the larger economies, Fiji and Papua New Guinea.

- Papua New Guinea is the most influential on the PICs in the short run.

Although the co-integration results convey long run relationships among the interest rate spreads of PICs and with Australia and the United States, in the short run there appears to be lack of widespread integration, especially between the larger PICs – Papua New Guinea and Fiji and with Australia. This in part reflects the smallness and shallow nature of financial systems in the PICs, largely dominated by subsidiaries of foreign banks while bond and stock markets are nearly non-existent, the presence of capital and exchange controls in most PICs, country specific factors such as institutional and regulatory quality, and different stages of economic development among others.

In sum, an integrated financial sector in the PICs is seen as a long-term objective. Policy recommendations such as enhancing the supervisory and macro-prudential frameworks in PICs to safeguard financial stability, improving institutional and regulatory quality (contract enforcements, credit bureaus, bankruptcy laws, collateral administrations) and continuation of financial markets development remain crucial to ensure that the benefits from financial integration are enjoyed by PICs.

8. Conclusion

The vast literature on financial integration suggests that it can take many forms and have either a regional or a global dimension depending on the country's financial connectedness with its neighbouring countries or with the global financial centres.

Although there have been various studies on financial integration, none has been conducted for PICs. This paper is the first empirical study to test the extent of financial integration through the banking sector in the PICs. The paper finds evidence of both long-run and short-run financial integration in PICs using an ARDL approach. This could have occurred given the presence of the same Australian banks that may have facilitated cross-border trade and financial activities in PICs and the absence of exchange controls particularly for Vanuatu. Moreover, the paper finds that Australia's dominance on trade and finance in the Pacific appears to have an impact only on the financial sectors of the smaller PICs – Tonga and Vanuatu in the short-run, which showed signs of financial integration compared to larger economies such as Papua New Guinea and Fiji.

The lack of widespread financial integration through the banking sector in PICs in the short-run is partly associated with the presence of capital and exchange controls, legal form chosen by Australian banks to penetrate the domestic financial sectors, shallow financial markets and other country specific factors. Nonetheless, increased foreign banks participation in PICs has improved the competitiveness and efficiency of the domestic financial sector. In the case of Fiji, the presence of foreign banks has somewhat led to a more competitive and efficient financial sector, with better products and service delivery to customers. However, potential risks associated with financial integration include the vulnerability of PICs to external shocks through the financial linkages it shares with the parent bank country, Australia. This in turn has implications on the financial stability of PICs as Australian banks are considered as systemically important banks.

As such, proper preconditions and policies needs to be in place, such as improving macro-prudential and supervisory frameworks, strengthening institutional and regulatory quality to ensure that PICs are able to reap the rewards from an integrated financial system and properly balance the risks at the same time.

References

Affinito, M. & Farabullini, F., 2009. Does the Law of One Price Hold in Euro-Area Retail Banking? An Empirical Analysis of Interest Rate Differentials across the Monetary Union. International Journal of Central Banking, 5(1), pp. 1–33.

Aviat, A. & Nicolas, C., 2007. The geography of trade in goods and asset holdings. Journal of International Economics 71, pp. 22–51.

Aziakpono, M., Kleimer, S., & Sander, H. (2012). Banking market integration in the SADC countries: Evidence from interest rate analyses. Applied Economics.

Baele, L., Ferrando, A., Hordahl, P., Krylova, E., & Monnet, C. (2004). Measuring financial integration in the euro area. ECB Occasional Paper, No 14.

Bai, Y., & Zhang, J. (2012). Financial integration and international risk sharing. Journal of International Economics.

Boyd, J. H. & Smith, B. D., 1992. Intermediation and equilibrium allocation of investment capital: Implications for economic development. Journal of Monetary Economics, 30(3), pp. 409–432.

Davies, M. & Vaught, J., 2011. Interest Rates and Bank Profitability in the South Pacific. PFTAC Regional Papers, pp. 1–30.

Didier, T., Montanes, R. L., & Schmukler, S. L. (2016). International Financial Integration of East Asia and Pacific. World Bank, Development Research Group, Macroeconomics and Growth Team & Development Economics Vice Presidency Operations and Strategy Team, pp. 1–29.

Edison, H. J., Levine, R., Ricci, L. & Slok, T., 2002. International Financial Integration and Economic Growth. National Bureau of Economic Research, NBER Working Paper 9164, pp. 1–40.

Engle, R. F. & Granger, C. W., 1987. Co-Integration and Error Correction: Representation Estimation, and Testing. Econometrica, The Econometric Society, 55(2), pp. 251–276.

Espinoza, R. & Kwon, G., 2009. Regional Financial Integration in the Caribbean: Evidence from Financial and Macroeconomic Data. IMF Working Paper WP/09/139, pp. 1–36.

Eyraud, L., Singh, D., & Sutton, B. (2017). Benefits of Global and Regional Financial Integration in Latin America. IMF Working Paper, pp. 1–32.

Fecht, F., Gruner, H. P., & Hartmann, P. (2012). Financial integration, specialisation and systemic risk. Journal of International Economics.

Fiala, T., & Havranek, T. (2016). The sources of contagion risk in a banking sector with foreign ownership.

Galindo, A. J., Izquierdo, A., & Liliana, R.-S. (2013). Financial Integration and Foreign Banks in Latin America: How Do they Impact the Transmission of External Financial Shocks. International Finance Review.

Howard, S. & Craigwelll, R., 2010. Convergence of Caribbean Stock Exchanges. pp. 1–22.

Granger, C., 1981. Some properties of time series data and their use in econometric model specification. Journal of Econometrics, 16(1), pp. 121–130.

Jamaludin, F., Klyuev, V. & Serechetapongse, A., 2015. What Drives Interest Rate Spreads in Pacific Island Countries? An Empirical Investigation. IMF Working Paper WP/15/96, pp. 1–26.

Jeon, B. N., & Wu, J. (2013). Foreign Banks, monetary policy and crises: Evidence from bank-level panel data in Asia. International Finance Review.

Johansen, S. & Juselius, K., 1990. Maximum Likelihood Estimation and Inference on Cointegration with Applications to Demand for Money. Oxford Bulletin of Economics and Statistics, pp. 162–210.

Kleimeier, S., & Sander, H. (2000). Regionalisation versus globalisation in European financial market integration: Evidence from cointegration analyses. Journal of Banking & Finance, pp. 1–39.

Klein, M. & Olivei, G., 2005. Capital Account Liberalisation, Financial Depth and Economic Growth. NBER Working Paper 7384, pp. 1–32.

Kose, A. M., Prasad, E., Rogoff, K. & Wei, S.-J., 2006. Financial Globalisation: A Reapprasail. NBER Working Paper 12484, pp. 1–91.

Lane, P. R. & Ferretti, M. M., 2005. Financial Globalisation and Exchange Rates. IMF Working Paper WP/05/3, pp. 1–46.

Lean, H. H., & Hamid, S. F. (2016). Is ASEAN Ready for Banking Integration? Evidence from Interest Rate Convergence. Indonesian Capital Market Review.

Levine, R., Loayza, N. & Beck, T., 2000. Financial intermediation and growth: Causality and causes. Journal of Monetary Economics, 46(1), pp. 31–77.

Muntean, R. (2014). Assessing integration of EU banking sectors using lending margins. Theoretical and Applied Economics.

Narayan, P. K. & Smyth, R., 2004. Temporal Causality and the Dynamics of Exports, Human Capital and Real Income in China. International Journal of Applied Economics, pp. 24-45.Park, K. H., 2005. A Test of Financial Integration In East Asia. Multinational Business Review , 13(1), pp. 1-21.

Pesaran, M. & Shin, Y., 1999. An Autoregressive Distributed Lad Modelling Approach to Cointegration Analysis.

Saab, S.Y., Vacher, J. 2007. Banking Sector Integration and Competition in CEMAC, IMF Working Paper No. 3.

Sahay, R. et al., 2015. Rethinking Financial Deepening: Stability and Growth in Emerging Markets. IMF Staff Discussion Note SDN/15/08, pp. 1-41.

Sheridan, N., Tumbarello, P. & Wu, Y., 2012. Global and Regional Spillovers to Pacific Island Countries. IMF Working Paper WP/12/154, pp. 1-41.

Stavarek, D., Repkova, I. & Gajdosova, K., 2011. Theory of financial integration and achievements in the European Union. Munich Personal RePEc Archive, MPRA Paper No.34393, pp. 1-31.

Tayebi, K. S. & Fakhr, S. Z., 2009. Determinants of Financial Integration in the East Asia-Pacific Region. Iranian Economic Review, Vol.14 (No.23), pp. 1-19.

Wihardja, M. M., 2013. Financial Integration Challenges in ASEAN beyond 2015. ERIA Discussion Paper Series, pp. 1-43.

Appendix 1: Data Sources

Variables	Source(s)
Interest rates spreads (difference between lending and deposit rates)	World Bank Development Indicators*
TED spreads (difference between the 3-month LIBOR (in US dollar) and the 3-month Treasury bill.	Federal Reserve Bank of St. Louis
GDP growth	World Bank Development Indicators
FDI Inflows (% of GDP)	World Bank Development Indicators
Inflation (% change in CPI)	World Bank Development Indicators

*Data for Fiji was obtained from the Reserve Bank of Fiji, while the remaining PIC countries were from the World Bank Development indicators.

GRIFFITH ASIA INSTITUTE

griffith.edu.au/asiainstitute