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Regional Economic Integration in the Pacific: An Empirical Study

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ABSTRACT   *The Pacific Islands Forum, the regional organization comprising 14 Pacific Island countries (PICs), Australia and New Zealand is committed to strengthen regional cooperation and integration. This paper examines progress in real and financial integration in the region. Utilizing the methodology based on international parity conditions: purchasing power parity and uncovered interest parity, the study concludes that while PICs' integration amongst themselves and with Australia and New Zealand, is relatively advanced with respect to goods and services, the financial market integration remains incomplete. The policy implication is impact of further liberalization is likely to be substantial on financial markets.*

KEY WORDS: Economic integration, purchasing power parity, uncovered interest parity, Pacific Islands, Australia, New Zealand

Introduction

Successful efforts culminating in the introduction of a single currency in Europe, and other similar efforts in terms of monetary union in developing countries in other regions,[1] encouraged policy-makers in the Pacific region to promote regional economic integration. Initiatives in 2002 such as the promotion of free trade by 2010 amongst the Pacific Island countries (PICs)[2] as a steppingstone and a larger free trade area later with Australia and New Zealand[3] are just a beginning. Close on the heels of the two agreements signed in 2002, came a recommendation in March 2003 from an Australian Senate Committee (2003). The Senate Committee, which studied Australia's relations with the PICs, suggested the adoption of a common currency, preferably the Australian dollar as part of efforts toward ushering in a Pacific Economic and Political Community, aiming at deeper integration, beyond trade in goods and services. Towards achieving this objective, the regional organization, the Pacific Islands Forum (the Forum), comprising the 14 PICs and the two advanced countries, Australia and New Zealand formulated a draft Pacific Plan for

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Strengthening Regional Cooperation and Integration (Pacific Islands Forum Secretariat, 2005).

The objective of this paper is to measure the impact of integration efforts undertaken so far in trade and services. The remainder of the paper is organized as follows. The second section presents a brief background of economic integration efforts in PICs; the third section deals with a brief literature review as well as the methodology employed in the study; the fourth section reports the results; and the fifth and final section presents a summary and conclusions with policy implications.

Economic Integration Efforts in the Pacific Island Countries (PICs)

There is considerable diversity among PICs in several areas: physical endowments, natural resources and population. Land area varies from country to country: 24 squared kilometres in the case of Nauru to 462,840 squared kilometres in the case of Papua New Guinea (PNG). So too is population with the most populous nation being PNG (5.1 million) and the least being Niue (2000) (Table 1). While Kiribati and Tuvalu are atoll countries with poor soils and hence with limited agricultural possibilities, PNG, the Solomon Islands, Fiji, Samoa and Tonga have relatively large tracts of fertile land, with substantial agricultural potential.

Despite these variations, the economic challenges faced by all PICs are similar: small domestic markets and remoteness from major markets (Urwin, 2004). They have to depend upon imports for almost all basic commodities; and rely upon a very few exports such as fish, copra, timber and tourism and on remittances from migrant seafaring men, to finance their imports. Almost all PICs depend heavily on foreign aid. The aid inflows have continued from their former colonial masters despite their

Table 1. Selected key indicators of Pacific Island countries

	Per capita GDP		Human dev index ranking	Aid per capita US$ 2002	Aid as a percentage of GDP 2002	Average growth rate (%) 1990–2003
	Population ('000)	(Current prices) in US$ 2003				
Cook Islands	19	2651	62	490.9	28.00	3.3
Fiji	799	2281	81	41	1.80	1.6
Federal States of Micronesia	114	1864	120	702	37.40	1.8
Kiribati	85	530	129	203.3	18.60	2.9
Papua New Guinea	5099	523	133	36.4	7.2	3.2
Republic of Marshall Islands	51	2008	121	823.3	49.60	2.3
Samoa	175	1484	117	214.2	14.50	0.5
Solomon Islands	418	541	124	56.8	11.00	0.1
Tonga	98	1347	63	217.2	16.40	2.5
Tuvalu	11	345	118	254	45	3.8
Vanuatu	183	1138	129	133	11.7	2.1

Source: ADB (2004), IMF (2004), UNESCAP (2004).

political independence in the late 1970s and most of the foreign aid is utilized by government and other public sector agencies. The private sectors of the PICs are weak.

The PICs are open economies. Their trade volumes in commodities (exports and imports) expressed as percentages of gross domestic product (GDP) are fairly high. In 2000, they ranged from 120% in Kiribati to 68% in Republic of Marshall Islands (RMI). Australia is a major trading partner, besides New Zealand. Exports of PICs are limited in range. While PNG's major exports are gold, petroleum, copper, timber and coffee, Fiji's main exports are sugar, garments and gold. For smaller island countries, which have negligible manufacturing capacity, reliance on primary exports is much greater. For Samoa, exports are fish, copra and related products; for Tonga squash, fish and root crops; and for Vanuatu, beef, copra and cocoa. Thus, PICs are generally more competitive than complementary to each other.

Intra-PIC trade has been small (Table 2). The major intra-regional trading partners are Fiji and PNG, understandably because of their significant manufacturing base. Fiji has been exporting to other PICs processed consumer goods in fairly large volumes, such as wheat flour, cooking oil and biscuits. However, Fiji's imports from other PICs are confined to a very small volume of agricultural commodities. PNG exports coffee and other manufactured goods. Thus, only these two PICs, PNG and Fiji are substantially diversified. As a result, the PICs lack product diversity (Jayaraman, 2005).

Financial sectors in PICs are at infant stages of development with barter economy still prevailing in remote groups of islands in each island nation. As a result, no financial instruments have emerged to be attractive enough for foreigners. Although most of the PICs have liberalized current accounts in balance of payments, there are capital controls still in existence to prevent de-stabilizing outflows. The state controlled national provident funds, which collect monthly contributions from employers and employees at some agreed percentage levels are the major institutions dominating the financial sectors. As they have been allowed to hold only a small proportion of their assets in overseas investments, national provident funds hold their assets in terms of government and government agencies-issued securities. Among PICs, only Fiji has some semblance of stock market activities. However, there is not much trading activity. Thus, the only kind of capital inflows, which PICs experience are with regard to foreign direct investment (FDI) and loans and concessional assistance from international funding agencies. The FDI has been in hotel and other tourism development activities, and retail trade such as super markets and to a small extent in consumer industries.

The exchange rate arrangements of PICs vary. They span the continuum from the exclusive use of a foreign currency as legal tender through to an independent and free-floating domestic currency. Eight PICs, which do not have an independent domestic currency of their own have adopted the national currencies of Australia, New Zealand or the US: Kiribati, Nauru and Tuvalu (the Australian dollar); the Cook Islands and Niue (the New Zealand dollar); and Federal States of Micronesia (FSM), RMI, and Palau (the US dollar). Five PICs (Fiji, Samoa, Solomon Islands, Tonga and Vanuatu) have their own currencies, pegged to baskets of currencies whose composition and weights are generally kept confidential. PNG, however, has a freely floating exchange rate regime.

Table 2. Intra-regional exports and imports of PICs

Countries		Intra-reg exports (% of total exports)	Imports (% of total imports)	Intra-reg trade (% of total trade)	Intra-reg trade (% of GDP)	Exports to Australia (% of total exports)	Imports from Australia (% of total imports)	Exports to NZ (% of total exports)	Imports from NZ (% of total imports)	Total trade (% of GDP)
Cook Islands	Average of 1994–1997	–	10.26	9.52	4.9	21.07	7.19	25.51	70.94	51.43
	1998	–	11.76	10.83	5.6	28.3	9.75	10.4	68.2	52.45
	1999	–	10.44	9.82	5.2	9.32	8.2	25.2	68.94	54.85
	2000	–	18.49	15.68	12.03	33.91	5.97	25.13	60.58	76.73
	2001	–	11.12	9.74	6.77	29.12	6.1	8.2	74.83	74.4
	2002	–	6.2	5.6	3.41	22.08	6.85	13.9	79.07	61.5
Fiji	Average of 1994–1997	0.31	0.07	0.38	0.505	26.67	39.86	6.99	15.50	76.87
	1998	4.73	0.12	2.13	0.73	33.79	44.84	4.31	15.11	86.84
	1999	6.84	0.1	2.81	0.64	33.02	41.09	4.47	13.10	90.62
	2000	7.11	0.14	3.35	0.94	25.67	48.71	3.53	13.04	89.62
	2001	8.33	–	3.7	0.07	19.74	44.26	3.46	14.88	82.5
	2002	7.21	–	3.02	0.06	19.43	37.31	3.76	17.15	89.26
Kiribati	Average of 1994–1997	–	7.8	5.15	11.67	3.02	18.11		3.94	88.78
	1998	–	10.01	8.7	17.06	4.05	21.82	–	1.69	102.74
	1999	–	14	11.37	16.31	2.59	33.08	–	3.02	98.02
	2000	–	14.21	10.7	22.26	0.24	34.12	–	4.75	80.98
	2001	–	20.8	11.87	21.53	0.39	37.16	–	2.91	91.87
	2002	–	12.67	9.14	20.69	0.38	26.6	–	3.58	124.74
RMI	Average of 1994–1997	–	0.97	0.71	0.46	–	1.31	–	1.01	83.41
	1998	–	0.78	0.7	0.35	–	2.01	–	0.71	67.93
	1999	–	1.16	1.02	0.5	–	1.42	–	0.85	68.94
	2000	–	1.25	1.05	0.54	–	1.46	–	0.89	68.33
	2001		NA	NA	NA	NA	NA	NA	NA	61.3
	2002		NA	NA	NA	NA	NA	NA	NA	67.62
FSM	Average of 1994–1997	0.01	–	0.01	0.01	NA	2.62	–	–	65.61

Table 2. (*Continued*)

Countries		Intra-reg exports (% of total exports)	Imports (% of total imports)	Intra-reg trade (% of total trade)	Intra-reg trade (% of GDP)	Exports to Australia (% of total exports)	Imports from Australia (% of total imports)	Exports to NZ (% of total exports)	Imports from NZ (% of total imports)	Total trade (% of GDP)
	1998	0.19	–	0.02	0.01	NA	4.02	–	–	64.71
	1999	0.2	–	0.02	0.01	NA	19.79	–	–	64.39
	2000	NA	NA	NA	NA	NA	NA	NA	–	73.07
	2001	NA	NA	NA	NA	NA	NA	NA	NA	53.05
	2002	NA	NA	NA	NA	NA	NA	NA	NA	52.01
PNG	Average of 1994–1997	0.03	0.03	0.06	0.11	27.68	51.43	1.39	4.01	88.89
	1998	0.21	0.24	0.45	0.21	18.72	52.41	0.69	4.12	94.70
	1999	0.18	0.30	0.44	0.23	26.29	53.01	0.16	4.1	114.12
	2000	0.21	0.36	0.57	0.29	29.98	49.54	0.73	3.8	116.45
	2001	0.1	0.21	0.25	0.2	24.62	51.29	1.35	4.02	94.42
	2002	0.10	0.13	0.31	0.18	23.74	49.26	1.32	4.4	95.81
Samoa	Average of 1994–1997	–	10.49	7.70	6.50	84.18	19.18	6.17	35.15	47.89
	1998	–	18.08	11.9	11.6	48.96	16.23	2.74	22.59	51.74
	1999	–	16.67	12.27	11.52	58.95	14.59	3.68	23.01	57.34
	2000	–	9.48	13.02	9.48	57.36	27.31	2.37	13.89	38.69
	2001	–	12.6	9.98	13.64	60.98	13.12	1.42	17.32	59.9
	2002	–	20.33	14.17	13.43	59.5	15.75	2.05	4.25	56.2
Solomon Islands	Average of 1994–1997	0.38	0.66	1.04	1.92	1.38	40.92	0.26	7.43	94.27
	1998	1.07	4.3	5.1	2.66	1.97	42.96	0.35	5.26	108.46
	1999	1.29	3.7	4.36	2.81	1.34	38.53	0.47	6.29	110.78
	2000	2.1	6.1	8.2	3.7	2.79	27.5	0.74	5.63	85.89
	2001	–	7.46	4.4	NA	1.69	29.27	0.28	5.0	NA
	2002	–	9.1	5.10	NA	0.88	31.31	0.25	5.02	NA
Tonga	Average of 1994–1997	3.08	7.65	6.97	3.76	4.72	33.56	9.66	38.47	51.67
	1998	6.12	7.41	7.26	4.04	4.53	24.68	13.98	36.17	52.4

Table 2. (*Continued*)

Countries		Intra-reg exports (% of total exports)	Imports (% of total imports)	Intra-reg trade (% of total trade)	Intra-reg trade (% of GDP)	Exports to Australia (% of total exports)	Imports from Australia (% of total imports)	Exports to NZ (% of total exports)	Imports from NZ (% of total imports)	Total trade (% of GDP)
	1999	2.0	9.96	8.79	4.98	3.21	19.98	8.74	37.22	65.7
	2000	1.65	12.2	9.73	6.65	1.98	10.27	3.68	23.99	79.2
	2001	2.55	19.73	17.1	12.98	1.56	11.24	4.41	33.21	102.9
	2002	2.14	21.42	17.0	13.61	1.44	13.2	3.55	30.83	133.7
Tuvalu	Average of 1994–1997	1.04	30.49	45.5	29.23	–	39.41	–	6.31	81.63
	1998	1.61	59.81	58.39	41.24	–	20.21	–	6.31	70.06
	1999	5.14	63.84	57.18	45.67	–	18.1	–	5.27	79.87
	2000	11.39	58.58	56.01	58.77	–	19.57	–	4.57	104.93
	2001	13.92	65.19	62.48	69.7	–	16.28	–	7.68	52.10
	2002	9.16	54.32	51.1	NA	–	12.9	–	5.21	NA
Vanuatu	Average of 1994–1997	0.01	0.93	0.94	2.67	4.05	21	0.47	5.19	85.58
	1998	1.41	5.67	7.08	3.92	0.60	21.67	0.39	4.76	92.32
	1999	1.19	4.12	5.31	3.98	0.68	17.95	0.44	4.13	122.87
	2000	4.84	8.55	13.39	5.75	0.54	25.08	0.44	6.93	79.24
	2001	–	4.72	3.17	3.58	3.01	25.37	1.12	6.57	53.72
	2002	–	7.11	1.88	4.13	3.20	23.48	0.64	10.69	52.41

Note: NZ, New Zealand; NA, not available; "–", negligible.
Source: ADB (2004).

   Since PICs trade a great deal with Australia, gains from regional economic integration, including currency union would be substantial. Studies (de Brouwer, 2000; Jayaraman, 2001) showed that a currency union between PICs without Australia would not result in as much gains as would result from a larger sized union with Australia. However, there are uncertainties regarding the sharing of seignorage revenue with Australia. Further, there are no indications as to whether the Reserve Bank of Australia would be prepared to act as a lender of last resort to commercial banks in crises in PICs (Jayaraman, 2004).

A Review of Literature and Methodology

Economic integration is considered in terms of real and financial integration. Referring to Wong's (1995) study, which relied on increased volume of trade and investment as evidence of increased international integration, Laurenceson (2003) observed such an approach only provided circumstantial evidence and lacked rigorous theoretical basis, rendering the interpretation of results difficult. Instead, he adopted empirical tests derived from the international parity conditions: the hypotheses of real interest parity (RIP), uncovered interest parity (UIP), and purchasing power parity (PPP). Mankin (1994) observed the international parity conditions remained a popular analytical tool to consider economic integration for several reasons: (i) they are fundamental tenets of macro-economic theory; (ii) the results utilizing such fundamental tenets could be more clearly interpreted; and (iii) data for testing are readily available in high frequency.
   Accordingly, this study on regional economic integration of PICs utilizes the parity conditions to shed light on the prevailing degree of economic integration between PICs amongst themselves on the one hand, and PICs with Australia and New Zealand on the other hand.

The Methodology

This study follows the methodology employed by Cheung *et al.* (2003) and Laurenceson (2003) in testing the economic integration. In the studies undertaken by these two authors, RIP framework was utilized. Following the procedure delineated by Laurenceson (2003), RIP, which combines both UIP and PPP, is defined as:

$$r_t^{ke} - r_t^{k*e} = (i_t^k - \pi_{t+k}^e) - (i_t^{k*} - \pi_{t+k}^{*e}) \qquad (1)$$

where r_t^{ke} is the expected k period real interest rate in the domestic country; r_t^{k*e} is the expected k period real interest rate in the foreign country; i_t^k is the k period interest rate in the domestic country; i_t^{k*} is the k period interest rate in the foreign country; π_{t+k}^e is the expected inflation rate in the time period $t+k$ in the domestic country; π_{t+k}^{*e} is the expected inflation rate in the time period $t+k$ in the foreign country; and $\pi_{t+k} = p_{t+k} - p_t$.
   The exchange rate introduced here, which is calculated as the domestic price of foreign exchange, is expressed in log forms. Rearranging the right-hand side of equation (1) with expected exchange rate depreciation subtracted and added to, the following is obtained:

$$r_t^{ke} - r_t^{k*e} = (i_t^k - i_t^{k*} - \Delta s_{t+k}^e) - (\pi_{t+k}^e - \pi_{t+k}^{*e} - \Delta s_{t+k}^e) \tag{2}$$

where Δs_{t+k}^e is the expected depreciation of exchange rate.

$$\Delta s_{t+k} = s_{t+k} - s_t$$

In equation (2), the first term in the right-hand side refers to the uncovered interest differential and the second PPP differential. If financial capital were perfectly mobile, the UIP hypothesis would contend that arbitrage in financial markets would ensure that

$$i_t^k = i_t^{k*} + \Delta s_{t+k}^e \tag{3}$$

Similarly, the PPP hypothesis would contend that arbitrage in goods and services markets would ensure that

$$\pi_{t+k}^e = \pi_{t+k} + \Delta s_{t+k}^e \tag{4}$$

When these two parity conditions hold good, the two terms on the right-hand side of equation (2) will collapse to zero, resulting in the absence of any real interest rate differential. The RIP hypothesis is a stringent parity condition, as it requires the twin requirement that UIP and PPP should hold at the same time.

Due to both expected exchange rates and prices are unobservable in the current period, the operational version of equation (2) can be expressed under the assumption of rational expectations that the *ex post* values are unbiased predictors of their *ex ante* counterparts, as:

$$r_t^{ke} - r_t^{k*e} = (i_t^k - i_t^{k*} - \Delta s_{t+k}) - (\pi_{t+k} - \pi_{t+k}^* - \Delta s_{t+k}) \tag{5}$$

In testing for economic integration, both UIP and PPP represented by $(i_t^k - i_t^{k*} - \Delta s_{t+k})$ and $(\pi_{t+k} - \pi_{t+k}^* - \Delta s_{t+k})$, respectively must hold or in other words, stationarity of UIP and PPP are required. Stationarity is required because any differentials away from the mean should be transitory and random in nature. If a series were non-stationary, the implication is that movements away from parity can be permanent and that there is no mechanism, such as arbitrage, to restore parity condition in the long run. For testing the series whether they are stationary or not, Augmented Dickey–Fuller (ADF) (Dickey & Fuller, 1979, 1981) and Phillips–Perron (PP) (Phillips & Perron, 1988) non-parametric tests are utilized.

In order to investigate the degree of integration, the numerical mean values of UIP and PPP differentials are calculated. The null hypotheses, which require to be tested are: (i) UIP differential is equal to zero; and (ii) PPP differential is equal to zero. If the null hypothesis is rejected or UIP (PPP) holds, it indicates a given pair of countries are integrated with the flow of financial capital (the flow of goods and services).

Data

This study employs monthly data cover from 1985Q4 to 2004Q1. The data are then used to examine the economic integration between PICs amongst themselves and with two advanced Forum member countries Australia and New Zealand. The description and data source details are indicated in Table 3.

Table 3. Data description and source details

Data	Country	Source of data
End-of-period nominal exchange rate	Australia, Fiji, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu	International Financial Statistics (IFS), IMF
Consumer price index	Australia, Fiji, New Zealand, Papua New Guinea, Samoa, Solomon Islands , Tonga, Vanuatu	IFS, IMF
Bond yield	Samoa	IFS, IMF
Deposit rate	Tonga	IFS, IMF
Discount rate	Papua New Guinea	IFS, IMF
Money market rate	Australia, Fiji, New Zealand, Vanuatu	IFS, IMF
Three-month Treasury-bill rate	Solomon Islands	IFS, IMF

Empirical Findings

Utilizing the data, as outlined in the previous section, the unit root tests were conducted for pairs of countries. The test results using ADF are reported in Table 4, and PP tests are given in Table 5. In the case of PPP series, the null hypothesis of a unit root is rejected in all cases at high levels of statistical significance. The PPP strongly holds not only for all PICs with Australia and New Zealand but also amongst all PICs.

In the case of UIP, the results are mixed. Results suggest that UIP holds better amongst smaller PICs themselves. More than 60% of the cases examined strongly reject the null hypothesis of UIP does not hold. There are 10 pairs of PICs that shows financially integrated out of the total of 15 pairs amongst PICs tested using both ADF and PP test. Financial integration amongst PICs does hold for a number of pairs of the countries between: Fiji and PNG, Fiji and Samoa, Fiji and Solomon Islands, Fiji and Tonga, Fiji and Vanuatu, PNG and Tonga, PNG and Vanuatu, Tonga and Vanuatu. The null hypothesis of UIP does not hold among the aforementioned pairs of countries as they are rejected employing both ADF and PP tests. UIP holds between Samoa and Tonga only in the use of ADF test. UIP holds between PNG and Samoa using ADF test and PP test when time trend is included.

However, PICs' integration with the more advanced Forum member countries such as Australia remains weak and incomplete. Six PICs are generally more integrated with New Zealand than with Australia in respect of both goods and services and financial markets. The results indicate that while PICs' integration with Australia and New Zealand is already relatively advanced with respect to goods and services markets. Financial market integration of the region remains incomplete. These findings are confirmed by tests of significance for mean values of PIP and UIP differentials.

Table 6 reports the mean values for PPP and UIP differentials. The mean values of PPP differentials for each pair of countries are relatively small compared to those of UIP differentials. Further, the null hypothesis of the respective pair's mean value of PPP differential equals to zero cannot be rejected in all cases, except for Samoa and Solomon Islands. However, in regard to mean values of UIP differentials, it is found

Table 4. ADF test on UIP and PPP differentials

	PPP		UIP	
	Without trend	With trend	Without trend	With trend
Economic integration between Australia and PICs				
Australia – Fiji	−3.8982[11]***	−3.6789[11]***	−2.3725[2]	−2.7958[3]
Australia – PNG	−4.5494[7]***	−4.5211[7]***	−1.4804[1]	−3.6373[1]**
Australia – Samoa	−8.9344[0]***	−8.8816[0]***	−2.9864[1]**	−3.5542[5]**
Australia – Solomon Islands	−8.1191[0]***	−8.0695[0]***	−2.2326[1]	−1.9152[1]
Australia – Tonga	−9.3071[0]***	−9.3361[0]***	−1.4691[1]	−3.0151[2]
Australia – Vanuatu	−10.6634[10]***	−10.5974[0]***	−2.3423[4]	−2.9452[3]
Economic integration between New Zealand and PICs				
New Zealand – Fiji	−7.9917[0]***	−8.1538[0]***	−3.3079[0]**	−3.9654[0]**
New Zealand – PNG	−5.3133[2]***	−5.2733[2]***	−1.3294[1]	−3.9254[3]**
New Zealand – Samoa	−3.1229[7]**	−4.2788[6]***	−2.4834[2]	−2.5713[3]
New Zealand – Solomon Islands	−7.6078[0]***	−7.5520[0]***	−2.8172[0]*	−2.4876[0]
New Zealand – Tonga	−8.3952[0]***	−8.3037[0]***	−2.2568[3]	−2.3960[3]
New Zealand – Vanuatu	−3.2868[7]**	−4.33695[6]***	−2.2104[1]	−2.9744[1]
Economic Integration between:				
Australia – New Zealand	−7.5219[0]***	−7.5198[0]***	−2.7019[1]*	−2.7983[1]
Economic integration amongst PICs				
Fiji – PNG	−3.8854[11]***	−3.6202[11]**	−3.0518[1]***	−4.4035[1]***
Fiji – Samoa	−4.2249[6]***	−4.1173[5]***	−1.8604[7]	−2.4144[7]
Fiji – Solomon Islands	−8.8560[0]***	−8.9104[0]***	−3.7693[0]***	−3.8522[0]**
Fiji – Tonga	−5.9664[1]***	−4.1353[4]***	−4.3469[7]***	−4.0552[7]**
Fiji – Vanuatu	−10.6580[0]***	−10.6361[0]***	−4.0663[0]***	−4.3600[0]***
PNG – Samoa	−4.9102[5]***	−4.5359[5]***	−1.8213[1]	−3.8913[1]**
PNG – Solomon Islands	−9.2390[0]***	−9.1742[0]***	−2.1437[1]	−3.0199[2]
PNG – Tonga	−6.9509[2]***	−6.9708[2]***	−2.8557[2]*	−3.9962[1]**
PNG – Vanuatu	−4.3387[6]***	−4.3439[1]***	−2.8334[1]*	−3.9546[1]**
Samoa – Solomon Islands	−9.0102[0]***	−6.6987[1]***	−1.9237[0]	−1.7879[0]
Samoa – Tonga	−8.1776[0]***	−8.4420[0]***	−2.9113[2]**	−2.4565[2]
Samoa – Vanuatu	−5.1282[6]***	−5.2580[6]***	−2.2814[1]	−2.6543[1]

Table 4. (*Continued*)

	PPP		UIP	
	Without trend	With trend	Without trend	With trend
Solomon Island – Tonga	−8.2992[0]***	−8.2405[0]***	−1.4711[0]	−2.3205[0]
Solomon Island – Vanuatu	−7.1128[1]***	−7.0784[1]***	−2.0217[1]	−2.5111[1]
Tonga – Vanuatu	−4.6105[3]***	−9.0407[0]***	−3.5642[1]***	3.5355[1]**

Note: *, ** and *** denote statistical significance at the 10%, 5% and 1% level respectively.

Table 5. PP test on UIP and PPP differentials

	PPP		UIP	
	Without trend	With trend	Without trend	With trend
Economic integration between Australia and PICs				
Australia – Fiji	−9.9961[2]***	−10.1038[1]***	−2.9208[7]**	−3.5945[7]**
Australia – PNG	−7.5464[3]***	−7.4898[3]***	−1.9175[0]	−3.0990[1]
Australia – Samoa	−9.0243[7]***	−9.0381[7]***	−2.7216[1]	−2.8820[1]
Australia – Soloman Islands	−8.1114[4]***	−8.0574[4]***	−2.4069[3]	−2.0334[3]
Australia – Tonga	−9.4876[6]***	−9.7426[8]***	−2.0622[3]	−2.4545[3]
Australia – Vanuatu	−10.9603[3]***	−10.8944[3]***	−2.1082[3]	−2.3128[3]
Economic Integration between New Zealand and PICs				
New Zealand – Fiji	−8.2237[4]***	−8.3346[4]***	−3.0399[4]**	−3.0399[4]**
New Zealand – PNG	−8.5071[4]***	−8.4481[4]***	−2.3459[2]	−3.9529[2]**
New Zealand – Samoa	−8.8708[1]***	−8.9189[0]***	−3.0591[9]**	−3.3960[8]*
New Zealand – Soloman Islands	−7.6397[3]***	−7.5855[3]***	−2.7670[8]*	−2.3253[8]
New Zealand – Tonga	−8.4022[3]***	−8.3193[3]***	−4.6852[0]***	−5.6141[2]***
New Zealand – Vanuatu	−4.1485[5]***	−11.1735[5]***	−2.3458[8]	−2.6285[5]
Economic Integration between:				
Australia – New Zealand	−7.5327[1]***	−7.5128[2]***	−3.0316[1]**	−3.0385[1]
Economic integration amongst PICs				
Fiji – PNG	−9.6833[2]***	−9.7724[3]***	−3.0287[2]**	−3.7704[2]**
Fiji – Samoa	−9.4531[4]***	−9.4108[4]***	−3.2842[6]**	−3.4541[6]*
Fiji – Solomon Islands	−8.9041[4]***	−8.9787[5]***	−3.5956[9]***	−3.5086[11]**
Fiji – Tonga	−9.2611[0]***	−9.5776[3]***	−3.5902[5]***	−3.9317[5]**
Fiji – Vanuatu	−10.6645[2]***	−10.6556[2]***	−4.1454[2]***	−4.4772[2]***
PNG – Samoa	−6.7484[0]***	−6.7117[1]***	−2.2936[1]	−3.5313[2]**
PNG – Solomon Islands	−9.2390[0]***	−9.1742[0]***	−2.0814[2]	−2.8179[1]
PNG – Tonga	−8.2427[0]***	−8.1849[0]***	−2.9424[2]**	−3.3514[2]**
PNG – Vanuatu	−9.4616[7]***	−9.4466[7]***	−2.9264[2]**	−3.3342[2]*
Samoa – Solomon Islands	−9.0117[1]***	−8.9365[1]***	−1.9237[0]	−1.7849[1]
Samoa – Tonga	−8.1699[2]***	−8.4184[6]***	−1.4511[9]	−1.9156[6]
Samoa – Vanuatu	−9.6917[1]***	−9.9433[3]***	−1.6318[8]	−2.0783[5]

Table 5. (*Continued*)

	PPP		UIP	
	Without trend	With trend	Without trend	With trend
Solomon Islands – Tonga	−8.3161[4]***	−8.2516[4]***	−1.4479[1]	−2.3205[0]
Solomon Island s– Vanuatu	−9.1016[1]***	−9.0819[1]***	−2.0051[3]	−2.6446[3]
Tonga – Vanuatu	−8.0791[3]***	−9.4396[3]***	−3.0856[0]**	−3.2644[1]*

Note: *, ** and *** denote statistical significance at the 10%, 5% and 1% level respectively.

Table 6. Mean values for UIP and PPP differentials

	PPP	UIP
Australia – Fiji	−0.005895	−5.488489***
Australia – PNG	−0.006464	3.129414***
Australia – Samoa	0.001536	−0.862624***
Australia – Solomao Islands	−0.005755	1.803906***
Australia – Tonga	0.001053	−2.687619***
Australia – Vanuatu	−0.000619	−4.133357***
New Zealand – Fiji	−0.007330	−6.574302***
New Zealand – PNG	−0.007899	2.001003**
New Zealand – Samoa	−0.001488	−1.994075***
New Zealand – Solomon Islands	−0.007190	0.675495
New Zealand – Tonga	−0.000382	−4..632711***
New Zealand – Vanuatu	−0.002055	−3.102939***
Australia – New Zealand	0.001436	1.128411***
Fiji – PNG	−0.000569	8.575304***
Fiji – Samoa	0.005102	4.580574***
Fiji – Solomon Islands	0.000140	7.249797***
Fiji – Tonga	0.006948	2.758272***
Fiji – Vanuatu	0.005275	3.471354***
PNG – Samoa	0.002758	−3.994730***
PNG – Solomon Islands	0.000709	−1.325508**
PNG – Tonga	0.007517	−5.817033***
PNG – Vanuatu	0.005844	−5.814858***
Samoa – Solomon Islands	−0.030833***	2.669223***
Samoa – Tonga	−0.004213	−1.822308***
Samoa – Vanuatu	0.004545	−1.109211***
Solomon Islands – Tonga	0.006808	−4.4911525***
Solomon Islands – Vanuatu	0.005135	−3.778435***
Tonga – Vanuatu	0.008758	0.713094***

Note: *, ** and *** denote statistical significance at the 10%, 5% and 1% level respectively.

that they are highly significant, indicating rejection of the null hypotheses. There is further scope for financial sector liberalization, giving rise to greater gains from capital mobility.

Summary and Conclusions

This paper examined the degree of economic integration in the Pacific region. Focusing on goods and services markets as well as on financial markets, this study followed the methodologies employed by Laurenceson (2003) and Cheung *et al.* (2003). Econometric tests were conducted for checking whether there existed international parity conditions in terms of UIP differentials and whether the PPP differentials for each pair of countries were zero-mean time series. The ADF and PP tests conducted in regard to stationarity requirement of UIP and PPP showed that while PPP holds, there is weak indication for UIP holding. The same result was confirmed when the significance tests for mean values of UIP and PPP differentials were conducted.

The implication of the findings is that although the degree of financial integration between Australia and PICs is limited, the gains in future will be substantially large. Further liberalization efforts under PACER towards freer trade with Australia and New Zealand by 2015 will result in a larger sized market and strengthen their economic integration.

The conclusion is that although the PICs and Australia and New Zealand are already relatively integrated in goods and services, financial integration is weak. The policy implications are: (i) impact of future liberalization is likely to be substantial on financial markets; (ii) the pace of financial sector liberalization in PICs in particular should be stepped up; and (iii) capital mobility amongst PICs and as well as between PICs and the two advanced Forum members should be promoted by dismantling the existing barriers.

Notes

[1] These include: Communauté financière africaine (CFA), consisting of two zones, West African Monetary Union, and Central African Economic and Monetary Union in Africa; the rand zone; the Eastern Caribbean Currency Union (ECCU) within the Organization of Eastern Caribbean States (OECS); and the Caribbean Community and Common Market (CARICOM) in the Caribbean region.

[2] The 14 PICs are: Cook Islands, Fiji, Kiribati, Republic of Marshall Islands (RMI), Federated States of Micronesia (FSM), Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu.

[3] The two agreements signed in 2002 are known as the Pacific Agreement on Closer Economic Relations (PACER) and the Pacific Island Countries Trade Agreement (PICTA). While PACER became effective in 2002, PICTA became effective in 2003. Under PICTA, there will be free trade among all 14 PICs by 2010. Under PACER, which was signed by PICs and Australia and New Zealand, negotiations will begin by 2011 for promoting freer trade with Australia and New Zealand by 2015.

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