A COMMON CURRENCY FOR PACIFIC ISLAND COUNTRIES: A REVISIT

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Abstract

This paper re-visits the topic of a common currency for the Pacific region, comprising 14 Pacific island countries (PICs) and the region's two advanced countries, Australia and New Zealand. The PICs are highly dependent upon Australia and New Zealand for trade in goods and services and aid inflows. Earlier studies on regional common currency, which dealt with certain aspects of the optimum currency area conditions, took into consideration three kinds of shocks, namely shocks in world output, domestic output and price levels. Since PICs' growth is influenced by regional developments to a larger degree than by world developments, this paper takes into consideration regional shocks, in addition to shocks in global and national outputs. Using variance decomposition analysis in this paper we investigate whether PICs and the region's two advanced countries could be suitable candidates for a currency union.

Keywords: Optimum currency area, shocks, Pacific island countries, Australia and New Zealand

1. Introduction

Regional integration of Pacific island countries (PICs) has been the objective ever since their leaders joined hands with the two advanced countries in the region, Australia and New Zealand to establish in 1971 a regional organization called as South Pacific Islands Forum, until a name change in October 2000 to Pacific Islands Forum, knows as the Forum (Jayaraman 2007a). The Forum[1] comprises 16 members: Australia and New Zealand, and 14 independent PICs, which are: Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Recent steps towards promoting deeper integration derived inspiration from the birth of the new currency, the *euro* in 1999, heralding the arrival of the new Millennium. These initiatives include the signing of two agreements in 2002, one known as the Pacific Island Countries Trade Agreement (PICTA), aimed at ushering in free trade amongst all PICs by 2010, and the other as Pacific Agreement on Closer Economic Cooperation (PACER) for promoting by 2015 intensive economic cooperation between PICs and Australia and New Zealand (Jayaraman 2007b).

The idea of a common, regional currency was floated during the annual Forum Leaders' meeting held in Auckland in August 2003, which was attended by the heads of member governments. As the subject did not officially figure in the agenda of the meeting, it was not formally discussed. However, it was apparent that Australia was keen to adopt a common currency, as a step towards bringing about greater fiscal and monetary discipline. The timing of the proposal for a common currency was triggered by certain global and regional developments. They included the perceived terror threat to the region and failure of some PICs in maintaining peace and order. Furthermore, the deteriorating economic conditions in some of island states due to weak economic policies and poor governance were causing concerns to donors in regard to aid effectiveness (Hughes 2003), which prompted an Australian Senate Committee (2003) to come up with a strong plea for a *Pacific Economic and Political Community*. One of the recommendations made by the Australian Senate Committee for promoting regional stability was adopting a common currency, preferably the Australian dollar, replacing the existing national currencies.

The subject of a regional currency was the focus of attention in several studies. These include de Brouwer (2000), Chand (2003), Bowman (2002), Jayaraman (2001, 2003, 2004, 2005, 2006a, 2006b, 2007c) and Jayaraman and Ward (2006). It was concluded that due to the existence of substantial trade between Australia and PICs, the gains from adopting the Australian dollar, as common currency, which would arise from reduced transaction costs involved in currency conversion and from absence of volatility in exchange rates, would

1 Australia, as the largest and richest member of the Forum, bears a major proportion of its administrative costs. Further, it plays a lead role as a significant provider of foreign aid to PICs.

be large and beneficial. However, it was argued that since external shocks in the past affecting the PICs, Australia and New Zealand were asymmetric in nature, a single set of common monetary, fiscal and exchange rate policies would not serve individual country's interests and hence it was concluded that the time was not yet ripe for the formation of a currency union. The only study (Ward and Jayaraman 2006), which specifically examined the nature and impact of shocks on PICs and Australia and New Zealand, took into consideration three kinds of shocks, relating to world output, domestic output and price levels.

In the context of PICs' dependency for bilateral trade, aid and direct investment inflows on the two metropolitan countries in the region, it is considered appropriate to consider the impact of regional shocks as well. Accordingly, this paper re-visits the subject by taking into account shocks in regional output, represented by Australian output, besides the global and country specific output shocks.

The paper is organized on the following lines: the second section undertakes a very brief review of the literature on the subject; the third section outlines the methodology while the fourth section reports and interprets the results. The final and fifth section presents some conclusions with policy implications.

2. Review of Empirical Literature Review on Single Currency for the Pacific Region

In the event of the Australian dollar being adopted as the common currency of the region, the cost for Australia would be minimal since its central bank, the Reserve Bank of Australia (RBA) would continue with unfettered freedom to pursue its own monetary policy. Substantial benefits to Australia would consequently arise from increase in its volume of trade, since dollarisation of the region would lead to elimination of transaction costs and volatility in exchange rates between Australia and others in the region.

As Alesena and Barro (2001) noted, just as a common language promotes communication among people, a common currency could promote trade and investment among countries in the region. These benefits will have to be weighed against the likely costs that have to be incurred by other Forum members. The costs would include the costs of discontinuing their own independent currencies by replacing with the Australian dollar and the loss of seigniorage revenue from printing their own currencies. Further, all of them have to fall in line with Australian macroeconomic and exchange rate policies.

A common currency entails a single set of economic, monetary, financial and fiscal policies to influence the balance of payments of the region. Such a single set of policies can be justified only when there is a high degree of synchronization of business cycles for all prospective member countries of a currency union. According to Mundell's seminal contribution (1961), known

as optimum currency area (OCA) conditions, countries experiencing common external shocks would be better suited to form a currency union because it permits the use of union-wide policies to correct any imbalances, including the adjustment of the common currency. The OCA conditions have since been elaborated, refined and updated by growing literature on the subject (Bayoumi and Eichengreen 1993, 1994; Bayoumi, Eichengreen and Mauro 2000; Bayoumi and Ostry 1997; Bayoumi and Mauro 1999; Eichengreen and Bayoumi, 1999; International Monetary Fund 2001, 1997)

In regard to adoption the Australian dollar as common currency, a former Governor of New Zealand's central bank (Brash 2000), has gone on record in 2000 that the time for adopting the Australian dollar by New Zealand as a common currency was not ripe. Arguing along the lines of OCA conditions, he observed that there had been a lack of synchronization of business cycles between Australia and New Zealand during the recent past. In addition to the availability of a central banker's point of view, there have been some academic studies as well on the feasibility of a currency union between the two countries. These include Crosby and Otto (2003), Coleman (1999), Hargraves and McDermott (1999), Grimes, Holmes, and Bowden (1998). The findings were, however, not unanimous. While Grimes *et al.* (1998) felt that a common currency for Australia and New Zealand would be beneficial, Crosby and Otto (2003) opined otherwise. Arguing from the Australian point of view, Crosby and Otto (2003) concluded that (i) Australia and New Zealand were not suitable candidates for the currency union; (ii) the benefits of a currency union for Australia would be small; and (iii) it would be worthwhile to consider currency union with the United States rather than with New Zealand.

In regard to PICs, whose key indicators are given in Table 1, various studies on the feasibility of a single currency de Brouwer (2000), Chand (2003), Bowman (2002), Jayaraman (2001, 2003, 2004, 2006a, 2006b, 2007) and Jayaraman and Ward (2006) came to a general agreement that due to the existence of substantial trade between Australia and PICs, the gains from a single currency arising out of reduced transaction costs in currency conversion and from the absence of any volatility in exchange rates would be large and hence beneficial. However, it was argued by Ward and Jayaraman (2006) that since external shocks in the past affecting the PICs and the two developed countries in the region were asymmetrical in nature, one common set of monetary, fiscal and exchange rate policies for all Forum countries would not serve individual country's interest and hence it was concluded PICs are not suitable candidates for a currency union either with Australia or New Zealand. The two authors' study took into consideration three kinds of shocks in world output, domestic output and price levels. Since PICs have close association with the region's two advanced economies of Australia and New Zealand through trade (Table 2), regional shocks would be of considerable significance in determining the suitability of PICs' candidacy to form a regional currency union.

Table 1: Selected Key Economic and Social Indicators

Regions	Population ('000) 2004	Area ('000) Sq. km	Per Capita GDP (Current Prices) in US$ 2004	Development Index Ranking 2003	Vulnerability Index Ranking 2000	Aid Per Capita in US$ 2004	Aid	
							% of GDP 1990	% of GDP 2004
Cook Islands	19	0.2	2,651	62	NA	490.0	NA	28.0
Fiji	841	18.3	2,720	92	8	76.0	3.9	2.6
Fed States of Micronesia	110	0.7	2,300	120	NA	787.0	NA	36.0
Kiribati	98	0.7	970	129	59	171.0	22,5	17.8
Palau	20	0.5	6,870	NA	NA	978.0	NA	15.0
Papua New Guinea	5,722	462	560	137	30	46.0	7.2	7.6
Republic of Marshall Island	61	0.2	2,320	121	NA	836.0	49.6	37.4
Samoa	184	2.8	1,840	74	20	167.0	42.6	8.2
Solomon Islands	468	28.9	560	128	11	262.0	21.7	47.8
Tonga	102	0.7	1,360	54	3	109.0	26.3	9.1
Tuvalu	11	0.003	345	118	NA	260.0	47.2	45.0
Vanuatu	207	12.2	1,390	118	1	162.0	33.0	12.4

Source: World Bank (2006), Commonwealth Secretariat (2006).

Table 2: Intra-regional Exports and Imports of PICs

Country	Year	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 Island	Ave. 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	Ave. 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	Ave. 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	Ave. 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	Ave. 1994-1997	0.01	-	0.01	0.01	NA	2.62	-	-	65.61
	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	Ave. 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	Ave. 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 Island	Ave. 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	Ave. 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
	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	Ave. 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	Ave. 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

NA: Not available
" - ": Negligible
Source: Asian Development Bank (2003)

3. Methodology and Data

Following Chow and Kim (2003), we estimate the output growth function subject to three different types of shocks, namely global, regional and country-specific (u^g, u^r and u^d).

$$\Delta y_t^d = \beta_0 + \beta_1(L)u_t^g + \beta_2(L)u_t^r + \beta_3(L)u_t^d \quad (1)$$

where $\beta_i(L) = \beta_{i0} + \beta_{i1}L + \beta_{i2}L^2 + \ldots$ is a polynomial function of the lag operator, L. Generally, global shock influence economies both inside and outside the regional boundary. The oil price shock in the 1970s is an example of global shock. Regional shocks are generally common to economies within a region. On the other hand, country-specific shocks are unique to a particular economy, which may result from either aggregate demand shock (monetary or fiscal policy changes) or supply shocks on productivity or terms of trade (Bayoumi and Eichengreen, 1993).

The distinctions between these three shocks have significant, powerful policy implications. For example, if country-specific shocks are dominant and less correlated across the region, a member country of a currency union may be a loser, in the absence of monetary independence and freedom to resort to exchange rate adjustments. On the other side, if regional shocks affect all prospective member countries in the same manner, there is sufficient justification for a single set of common monetary and exchange rate policies within the region. In contrast, if global shocks are dominant and if they similarly affect all economies inside the region, a more global arrangement might be necessary. Nevertheless, as long as shocks influence all economies in the similar pattern, a global rather than regional policy arrangement may be more appropriate course of action in dealing with such shocks.

In the Pacific region, for instance, if shocks in global output (U.S. output) impact PICs more than regional shocks (say Australian output shock), the formation of American dollar bloc may be a better policy choice than a formation of an Australian dollar bloc. Based on these explanations, it is indicated that a model of regional integration needs to consider a minimum of three types of shocks.

Considering a three-variable model with global, regional and local outputs: y^g, y^r and y^d They are related to three structural shocks as follows:

$$\begin{pmatrix} \Delta y_t^g \\ \Delta y_t^r \\ \Delta y_t^d \end{pmatrix} = \begin{pmatrix} A_{11}(L) & A_{12}(L) & A_{13}(L) \\ A_{21}(L) & A_{22}(L) & A_{23}(L) \\ A_{31}(L) & A_{32}(L) & A_{33}(L) \end{pmatrix} \begin{pmatrix} u_t^g \\ u_t^r \\ u_t^d \end{pmatrix} \quad (2)$$

where $A_{ij}(L) = \alpha_{ij}^0 + \alpha_{ij}^1 L + \alpha_{ij}^2 L^2 + \ldots$. In the matrix form, $\Delta y_t = A(L)u_t$.

Following Chow and Kim (2003), it is assumed that the structural shocks are uncorrelated and of unit variance: $Var(u_t) = I$. Since structural shocks are unobserved, few identifying restrictions need to be employed to recover them from reduced-form innovations. First, both regional and country-specific shocks have no long run relationship with global output. Second, country-specific shocks are uncorrelated with regional output in the long run. Generally, these restrictions are usually imposed on the small economy because an economy is viewed to be small in a region and the region is a small part of the global economy. Structural vector autoregression (VAR) technique, as proposed by Blanchard and Quah (1989) and King, *et al*. (1991) will be applied to estimate the above empirical model. The technique depends on the long-run impact of structural shocks derived from the neutrality of demand shocks[2].

3.1 Data

In this study, output is represented by real GDP. Aside from Australia and New Zealand, six major PICs are studied. The choice of PICs is dictated by the availability of national accounts data series on a consistent basis. The PICs chosen are: Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. While the Australian output is used as a proxy for regional output, the US output represents the global output. All output data are in index form and the data sources are *International Financial Statistics*, International Monetary Fund (IMF) for real GDP data relating to Australia, New Zealand and the US; and UNESCAP (2007) and Asian Development Bank (2007) for real GDP data relating to PICs.

[2] Although such long-run restrictions tend to be less controversial and more readily accepted than other assumptions, they are not without criticisms. There are, at least two criticisms have been made. First, Faust and Leeper (1997) argue that structural inferences under the long-run scheme may not be reliable as the long-run effects of shocks are imprecisely estimated in finite samples and the long-run identification scheme transfers this imprecision to the estimates of other parameters of the model. Second criticism is that the estimated disturbances are intertwined with the underlying disturbances.

Table 3: USA, Aus, NZ and PICS: Real GDP Index numbers Pacific Islands, Real GDP

	1981	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006
USA	100.0	114.3	134.0	151.4	185.3	186.8	190.3	196.2	204.4	211.6	218.6
Aus	100.0	112.3	130.5	153.1	185.4	192.6	198.7	206.3	212.5	217.8	223.7
NZ	100.0	113.3	116.7	135.8	154.3	159.7	167.0	173.1	180.7	184.7	187.4
Fiji	100.0	93.3	104.5	119.3	131.1	134.6	140.4	141.8	149.3	150.4	155.8
PNG	100.0	107.3	113.7	171.3	190.8	194.2	192.3	196.5	201.8	208.5	216.2
Samoa	100.0	104.6	108.4	114.4	137.4	147.0	148.5	153.7	159.3	167.5	173.3
Sol. Is.	100.0	119.6	167.2	217.6	190.0	173.5	169.8	180.7	195.1	204.9	217.6
Tonga	100.0	115.8	117.5	142.8	154.3	158.3	163.1	168.3	170.6	174.6	177.9
vanuatu	100.0	126.9	124.0	170.9	197.3	192.0	182.6	187.8	198.2	211.7	226.5

Source: IMF (2007), ADB (2007), UNESCAP (2007)

4. Empirical Results

As a first step, we tested the time series properties of each data series of RGDP of US. Australia, New Zealand and six PICs. All the variables in levels contain unit root. However, test statistics reject the null of unit root at 5 % level of significance. Thus, the series are of I(1).

In the presence of a non-stationary series, a cointegration test was performed using the Johansen (1988) procedure. The test statistics indicated the presence of a long-run relationship in all PICs (Table 5.A and Table 5.B).

Table 4: Results of Unit Root Tests (Sample Period: 1981-2006)

GDP	ADF Test		Ng and Perron Test, MZa	
	Level (Constant with Trend)	First Difference (Constant without Trend)	Level (Constant with Trend)	First Difference (Constant without Trend)
US	-2.4020 (0)	-5.2199* (0)	-9.7780 (1)	-24.6035* (5)
Australia	-2.4881 (0)	-5.6786* (1)	-7.3209 (1)	-8.2985* (2)
New Zealand	-1.8646 (1)	-3.0367* (0)	-7.9403 (1)	-9.5529* (0)
Fiji	-2.2084 (2)	-7.5984* (0)	-7.4984 (0)	-7.9340* (0)
PNG	-2.2482 (1)	-3.7626* (0)	-12.2431 (1)	-11.5502* (0)
Samoa	-0.8479 (1)	-4.0592* (0)	-1.8885 (0)	-11.0951* (0)
Solomon	-1.9828 (1)	-3.3632* (0)	-5.0708 (1)	-11.1103* (0)
Tonga	-3.2707 (2)	-5.0089* (0)	-8.3452 (2)	-11.4452* (0)
Vanuatu	-2.1759 (0)	-4.3787* (0)	-6.5988 (0)	-10.6902* (0)

Note: The ADF critical value at 5% level is –2.9640 and –3.5629 for constant without trend and constant with trend regressions, respectively. These critical values are based on Mckinnon. The optimal lag is selected on the basis of Akaike Information Criterion (AIC). The Ng and Perron critical value is based on Ng and Perron (2001) critical value and the optimal lag is selected based on Spectral GLS-detrended AR based on SIC. The null hypothesis of the test is: a series has a unit root. The asterisk * denotes the rejection of the null hypothesis at the 5% level of significance. The figures in brackets denote number of lags.

Table 5.A: Results of Johansen and Juselius Multivariate Procedure (Australia as Regional Shock)

Hypothesis	Maximum Eigenvalue		Trace	
	Test Statistic	95%	Test Statistic	95%
Fiji				
P=0	25.21**	21.13	34.93**	29.80
P≤1	9.55	14.26	9.72	15.49
P≤2	0.17	3.84	0.17	3.84
PNG				
P=0	35.33**	21.13	47.75**	29.80
P≤1	11.32	14.26	12.42	15.49
P≤2	1.11	3.84	1.11	3.84
Samoa				
P=0	22.07**	21.13	30.93**	29.80
P≤1	7.61	14.26	8.85	15.49
P≤2	1.25	3.84	1.25	3.84
Solomon				
P=0	22.66**	21.13	28.94*	29.80
P≤1	5.07	14.26	6.28	15.49
P≤2	1.21	3.84	1.21	3.84
Tonga				
P=0	20.96*	21.13	31.61**	29.80
P≤1	10.43	14.26	10.65	15.49
P≤2	0.22	3.84	0.22	3.84
Vanuatu				
P=0	27.04**	21.13	35.31**	29.80
P≤1	8.27	14.26	8.27	15.49
P≤2	0.00	3.84	0.00	3.84

Notes: * and ** indicates significant at 10 and 5 per cent levels, respectively.
Critical values of trace and maximum eigenvalue according to Osterwald-Lenum (1992).

Table 5.B: Results of Johansen and Juselius Multivariate Procedure (New Zealand as Regional Shock)

Hypothesis	Maximum Eigenvalue		Trace	
	Test Statistic	95%	Test Statistic	95%
Fiji				
P=0	40.90**	21.13	52.38**	29.80
P≤1	11.27	14.26	11.48	15.49
P≤2	0.21	3.84	0.21	3.84
PNG				
P=0	24.95**	21.13	31.98**	29.80
P≤1	7.02	14.26	7.03	15.49
P≤2	0.01	3.84	0.01	3.84
Samoa				
P=0	26.39**	21.13	37.28**	29.80
P≤1	10.10	14.26	10.89	15.49
P≤2	0.79	3.84	0.79	3.84
Solomon				
P=0	23.94**	21.13	27.23*	29.80
P≤1	3.28	14.26	3.29	15.49
P≤2	0.01	3.84	0.01	3.84
Tonga				
P=0	29.75**	21.13	42.17**	29.80
P≤1	12.42	14.26	12.42	15.49
P≤2	0.01	3.84	0.01	3.84
Vanuatu				
P=0	21.84**	21.13	29.60*	29.80
P≤1	7.30	14.26	7.77	15.49
P≤2	0.47	3.84	0.47	3.84

Notes: * and ** indicates significant at 10 and 5 per cent levels, respectively.
Critical values of trace and maximum eigenvalue according to Osterwald-Lenum (1992).

Hence, all variables were entered in the VAR in levels, thereby resorting to the methodology of orthogonalized forecast error variance decomposition, which is based on Choleski factorization with particular ordering, namely: global output, regional output, and domestic output. Results of variance decomposition global, regional and country-specific shocks for a nine-year-ahead period with forecast errors are presented in Table 6.

Table 6: Variance Decomposition of Real Output in PICs: 1981– 2006
(Australian Output as Regional Output)

Period	S.E.	Global Output	Regional Output	Country output
Fiji				
1	0.031	3.979	1.596	94.425
3	0.039	10.257	25.815	63.928
5	0.044	18.080	31.208	50.712
7	0.048	25.273	31.900	42.827
9	0.052	31.217	31.366	37.417
Papua New Guinea				
1	0.054	11.622	0.612	87.767
3	0.094	7.291	24.144	68.565
5	0.116	6.229	42.289	51.482
7	0.118	8.449	41.306	50.245
9	0.119	9.586	40.656	49.758
Samoa				
1	0.034	3.844	51.294	44.862
3	0.050	3.370	59.416	37.214
5	0.065	3.655	64.459	31.886
7	0.072	3.685	68.035	28.281
9	0.073	3.645	68.478	27.877
Solomon Islands				
1	0.052	2.681	64.358	32.961
3	0.095	1.286	79.236	19.478
5	0.104	10.479	72.300	17.221
7	0.138	15.160	74.095	10.745
9	0.147	16.424	73.893	9.683
Tonga				
1	0.024	0.676	16.541	82.784
3	0.035	4.017	14.834	81.149
5	0.040	5.113	31.207	63.680
7	0.043	4.881	36.370	58.749
9	0.046	5.420	38.554	56.026
Vanuatu				
1	0.029	45.969	4.538	49.494
3	0.067	17.268	54.590	28.143
5	0.078	12.978	59.038	27.985
7	0.079	13.284	59.374	27.342
9	0.081	14.383	59.457	26.160

Cholesky Ordering: Global output, Regional output, Country-specific output

The results indicate the strong influence of country-specific shock in regard to Fiji, Papua New Guinea and Tonga. In the one-year-ahead period, about 94.4% of variability in Fiji's output is accounted for by variability in its own national output, followed by Papua New Guinea (87.8%) and Tonga (83.8%). This is contrasted with the results in the case of Samoa, Solomon Islands and

Vanuatu, where country-specific shocks account for a much lower proportion in their output variability ranging from 32.9% to 49.5%.

On the other hand, global output shock explains approximately 11.6% of variance of output in PNG in the one-year-ahead and much less in all PICs, except Vanuatu. Nevertheless, by 9 years ahead, the explanations of the variance by global shock in these economies are quite stable, except for Fiji, which exhibits an increasing path. The variation in Fiji's output is explained by global shock for about 31.2% in the 9-year ahead.

The results show that variations in the real GDP of all PICs are increasingly explained by regional shocks (proxied by innovations in Australian real GDP) from 1-year ahead to 9-year ahead period: Fiji (1.6%-31.5%), Papua New Guinea (0.6%-40.7%), Samoa (51.3%-68.5%), Solomon Islands (64.4%-73.9%), Tonga (16.5%-38.5%) and Vanuatu (4.5%-59.5%).

Using an alternative measure of regional shock, namely shocks in New Zealand's output, variance decomposition of PICs' real output is shown in Table 7. The results indicate that global shock still accounts for a small proportion of the yearly output variability at 1-year forecast horizon in Papua New Guinea, Solomon Islands and Vanuatu. However, it increases over time and accounts for a sizable proportion of variability in national output of Fiji (67%), Samoa (40.9%) and Tonga (42.6%). Further, consistent with the results reported in Table 6, the country-specific shock explains substantially a larger proportion of output variability in all PICs at the first-year-ahead forecast horizon, except for Fiji. These results imply that PICs are not to a great extent influenced by global and regional shocks in the short-term. However, the influence of country-specific shock is on the decline over the 9-year forecast horizon. Further more, the results show that the regional shock accounts for a large proportion of national output variability in all PICs at the one-year-ahead forecast. The influence of regional shock (when proxied by New Zealand's output variability) on national output is increasing over time, more than 20% in all PICs except Papua New Guinea at the 9-year-ahead forecast.

Thus, the variance decomposition results reveal that in the short-run, PICs are greatly influenced by their own country-specific shocks and less vulnerable to regional and global shocks.

Table 7: Variance Decomposition of Real Output in Pacific Island Countries (PICs), 1981 – 2006, (New Zealand Output as Regional Output)

Period	S.E.	Global Output	Regional Output	Country Output
Fiji				
1	0.031	48.234	42.231	9.535
3	0.036	55.250	37.258	7.493
5	0.038	55.236	37.570	7.194
7	0.044	64.342	29.348	6.310
9	0.047	67.570	26.364	6.065
Papua New Guinea				
1	0.050	3.209	13.437	83.354
3	0.080	3.303	7.214	89.483
5	0.088	6.190	10.102	83.708
7	0.092	8.574	13.581	77.845
9	0.095	10.005	13.914	76.081
Samoa				
1	0.030	21.637	15.276	63.087
3	0.051	27.117	45.084	27.798
5	0.071	39.942	45.118	14.939
7	0.080	41.532	45.209	13.259
9	0.082	40.937	45.906	13.157
Solomon Islands				
1	0.034	0.676	19.758	79.566
3	0.088	16.030	23.824	60.146
5	0.099	16.889	22.776	60.335
7	0.103	18.048	25.013	56.938
9	0.115	21.162	31.413	47.425
Tonga				
1	0.020	7.938	11.457	80.605
3	0.035	23.278	42.578	34.143
5	0.043	34.789	40.966	24.245
7	0.047	39.835	39.182	20.982
9	0.051	42.564	38.355	19.081
Vanuatu				
1	0.055	7.571	29.942	62.487
3	0.079	9.535	25.107	65.358
5	0.083	9.627	26.328	64.044
7	0.086	11.431	28.866	59.703
9	0.089	12.892	30.356	56.751

Cholesky Ordering: Global output, Regional output, Country-specific output

Table 8: Variance Decomposition of Real Output in Australia, 1981-2006

Period	S.E.	(Global Output) United States	(Regional Output) New Zealand	(Country-specific) Australia
1	0.010	37.873	0.000	62.127
3	0.023	30.484	10.347	59.169
5	0.034	28.687	18.257	53.057
7	0.042	27.693	21.494	50.814
9	0.049	27.425	22.920	49.656

Cholesky Ordering: Global output, Regional output, Country-specific output

Table 9: Variance Decomposition of Real Output in New Zealand, 1981-2006

Period	S.E.	(Global Output) United States	(Regional Output) Australia	(Country-Specific) New Zealand
1	0.014	6.357	6.392	87.251
3	0.028	4.523	31.108	64.369
5	0.039	5.814	32.394	61.792
7	0.048	8.172	33.445	58.383
9	0.056	10.214	34.646	55.141

Cholesky Ordering: Global output, Regional output, Country-specific output

Tables 8 and 9 focus exclusive attention on Australia and New Zealand. These two countries, unlike PICs have much deeper trade and investment relations, near perfect mobility in capital and labour between themselves. However, we observe that variability in their national outputs is greatly explained by their own specific shock, not only in the short term, but also in the long term. Furthermore, it is noted that these two countries experience asymmetric shocks in respect to global developments, as global shocks explain a larger proportion of the yearly forecast error in Australia than in New Zealand.

5. Summary and Conclusions

This paper undertook an empirical investigation whether PICs can form a currency union with Australia and New Zealand. Employing the methodology of variance decomposition with two different proxy measures for regional output, namely Australian and New Zealand output) shock, we find that (i) most of the variability in PICs's domestic outputs in the short- and medium terms appears to be largely explained by their own country-specific output shocks; (ii) the influence of domestic shock on PICs respective output declines over the 9-year period; (iii) the decreasing influence of country-specific shock in explaining the variability in domestic outputs in all PICs is accompanied by an increasing influence of regional shock in these economies; (iv) the role of global shock appears to be of less importance in explaining the variability of

domestic output in most PICs; and (v) variability in Australian output has much greater influence on PICs than variability in New Zealand's output on PICs' domestic outputs.

The conclusion that emerges from the foregoing discussion is that since PICs are strongly affected by their own country-specific conditions, they are not presently suitable candidates for a currency union amongst themselves. The variability in domestic outputs of PICs seems to result from their own aggregate demand shocks (monetary or fiscal policy changes) or domestic supply shocks, stemming from natural disasters and other unforeseen unstable conditions, including political uncertainties. Despite sharing several commonalities in terms of openness and other unique cultural characteristics such as communal land tenure, PICs are quite different from each other, because of the diversity in institutional factors and political trends, resulting in asymmetric domestic output shocks.

Since the influence of Australia has been large and evidence of an increasing role for the global currency is relatively faint, it is evident that regional output shocks would continue to be dominant. In these circumstances, although a currency union in the region cannot be justified in the short-term, there does exist a strong case for these economies to forge a regional currency bloc.

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