

Pacific island countries and dollarisation

Chakriya Bowman

Recent discussions in Australia have suggested that Pacific island countries should 'dollarise' to the Australian dollar. This is seen as a way to stabilise the economies of the region, which have been fraught with political and economic uncertainty. Standard currency analysis techniques indicate that dollarisation to the US dollar may be preferable. With Asia likely to overtake Australia as a dominant trading partner of major Pacific island economies, a discussion of currency reform in the Pacific should at least consider US dollarisation.

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No economist would disagree that an economy is affected by the decisions of its government and that political instability is rarely associated with a sound economy. The past decade has been marked by political instability in Pacific island countries (especially in Fiji, Solomon Islands and Papua New Guinea) and a lack of economic development (especially in Papua New Guinea, Solomon Islands and Vanuatu). As Duncan and Chand (2002) point out, 'all Pacific island countries...are experiencing difficulties in generating better living standards for their peoples and the political instability is making economic development even more difficult' (2002:1). Duncan and

Chand cite a number of factors that contribute to economic instability in the Pacific island countries, prime among them being high youth unemployment and low literacy rates. The Commonwealth of Australia recently offered dollarisation as a panacea for the economic ills of the Pacific (Australia 2003), an idea which has been speculated upon by both academics (Duncan 2002, de Brouwer 2000) and journalists alike ('Towards a Pacific common market', *The Sydney Morning Herald*, 14 August 2003). The Howard government is encouraging Pacific island countries to form unions and to amalgamate resources in an attempt to jump-start economic growth.



There has been much discussion over the past decade about the suitability of various currency regimes in emerging markets. Modern wisdom in the field of currency regimes for less developed countries seems to be trending toward one of two extremes: either countries should maintain an independently floating currency, such as that of the US dollar, or use a hard peg to fix the exchange rate to that of an important trading partner with a freely floating currency, such as the US dollar (Berg, Borensztein and Mauro 2002). Dollarisation, the process of adopting a major currency (usually the US dollar) as the currency of a smaller state, has been proposed for a variety of emerging market countries such as those of Latin America (Berg, Borensztein and Mauro 2002), Eastern Europe (Rusek 2002), and even Canada (Berg and Borensztein 2000). Indeed, some economists believe that all emerging markets should dollarise as a remedy for currency and economic instability (Calvo and Reinhart 1999).

The dollarisation proposed for the Pacific island countries is the adoption of the Australian dollar (Australia 2003). This proposal is seen as a remedy for the region's ongoing economic malaise, and the notion is popular in Australian political and academic circles. However, the idea of 'aussification' is somewhat less popular with the Pacific island countries themselves; the suggestion having been received by island leaders with somewhat less enthusiasm than it was proposed by Australian Prime Minister John Howard.¹ The political import of the issue should not be underestimated, however.

This paper seeks to contribute to the debate using recent currency data to determine whether the proposal for 'aussification' has merit. Prior studies have taken the assumption of strong Australian dollar ties as fact. However, using standard currency analysis techniques, this study

finds little evidence to support the belief that the Australian dollar is the most influential currency in the Pacific region. There is little evidence to support a strong and influential relationship between the floating Papua New Guinea kina and the Australian dollar, and regression testing indicates that only Tonga contains the Australian dollar in its currency basket. Cointegration testing offers a little more support for long-run relationships between the Pacific island currencies and the Australian dollar, but equally it supports relationships with the US dollar and the New Zealand dollar. Further, trading relationships have changed markedly over the past decade. The emergence of Asia as a major trading partner to many industrial economies during the 1990s has been echoed in the Pacific islands and, if recent trends continue, the US dollar value of trade with Asia will soon exceed that with Australia. With the kina the only floating Pacific currency, it is significant that the kina appears to be so strongly related to the US dollar, and it is possible that the strength of trade with Asia may lie behind this. If trade with Asia is denominated in US dollars, as is likely to be the case, then it is possible that dollarisation in its true sense is preferable to 'aussification'. Further investigation of the macroeconomic trading relationships between the Pacific and Asia is warranted, particularly since the economic changes made during the 1997 East Asian crisis, but will be left for other research.

As the United States is a less actively involved political force in the region, a decision to adopt the US dollar might prove to be far more beneficial to the Pacific island countries than the decision to adopt the Australian dollar. However, this paper does not propose that the US dollar should be adopted for the Pacific. Rather, it seeks to highlight the fact that alternative proposals may be worthy of study, particularly those of currency unions. It aims to provoke further debate before 'aussification' is accepted as



the appropriate way forward (Australia 2003, Recommendation 1:xiii).

Issues affecting the Pacific island countries

The Pacific island countries being considered for membership of the proposed Pacific Union consist of the Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, the Northern Mariana Islands, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tokelau, Tuvalu and Vanuatu. Of these 16 countries only six have their own currency (Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu). The Tongan pa'anga was pegged to the Australian dollar during the 1980s, but was subsequently pegged to a basket of currencies in 1991.² Vanuatu has likewise used a currency basket, composed using a transaction-weighted technique. Solomon Islands and Fiji use fixed-peg exchange rates, while the Papua New Guinea kina has been a floating currency since 1994—which perhaps accounts for its high variance (Table 1). It should be noted, however, that there is evidence of government intervention in the kina (Duncan and Xu 2000), and it is perhaps best regarded as a managed float. The other Pacific island countries share a currency with a more developed nation (Cook Islands, Niue and Tokelau use the New Zealand dollar; Kiribati, Tuvalu and Nauru use the Australian dollar; Federated States of Micronesia, Northern Mariana Islands and Marshall Islands use the US dollar; and New Caledonia uses the French Pacific franc).

The Pacific island countries share many economic conditions in common: they are micro economies, reliant on commodity exports and tourism for revenue; their economies are affected significantly by commodity export revenue variability (In

and Onchoke 1995); and they have been subject to much political instability and civil unrest (Duncan and Chand 2002). Pacific island countries were mostly colonies for much of the past two centuries before achieving independence relatively recently. They have extremely underdeveloped economies and are substantial consumers of foreign aid. Australia is the second-largest aid donor to the Pacific island countries, with Japan the largest donor, and New Zealand the third largest (Australia 2003). As a result, Australia and New Zealand take a somewhat proprietary view of the region, and Australia has recently been regarded as the neighbourhood 'sheriff' by the United States ('We want to take off the sheriff's badge', *The Canberra Times*, 27 October 2003), although it is debatable whether Australians, much less Pacific island inhabitants, are comfortable with this concept.

A range of currency regimes has been considered for the Pacific island countries, and indeed the Papua New Guinea kina was floated in 1993 with encouragement from Australia (Karunaratne 1988, Australia 1995). At this time a floating exchange rate was generally regarded by economists as the most beneficial currency regime for a developing economy, but the aftermath of the Asian crisis of 1997 has seen a reassessment of this opinion (see Frankel et al. 2001 for a summary of the discussion with respect to emerging markets). Studies by the International Monetary Fund and other prominent economic bodies have reassessed options such as currency boards, fixed pegs and dollarisation for stabilising small and emerging market economies without leaving them exposed to sharp fluctuations in their currencies, which may damage their levels of trade. When discussing the problems of the Pacific islands, dollarisation to the Australian dollar is the most common proposal and indeed it is the only option considered in many papers. An alternative

Table 1 Currency statistics ($R_t = \ln(C_t/C_{t-1}) * 100$)

Currency	Mean	Maximum	Minimum	Variance	Skewness	Kurtosis	ADF	PP	Observation period
Fiji	-0.0040	2.2218	-2.1724	0.2138	-0.0114	4.9710	0.2004	0.2304	12/01/98 – 5/30/03
Papua New Guinea	0.0531	16.0923	-12.7286	0.8739	0.6778	66.3801	-2.5419	-3.0683	12/31/93 – 5/30/03
Solomon Islands	0.0328	20.6584	-10.0619	0.6823	6.6036	186.0926	-1.1301	-1.3810	6/01/93 – 5/30/03
Tonga	0.0011	3.3643	-5.9958	0.5366	-0.2667	6.2530	-1.5544	-1.5914	6/01/93 – 5/30/03
Vanuatu	-0.0002	2.5433	-1.8688	0.0990	0.1634	11.5513	-0.2884	-0.3104	12/31/93 – 5/30/03
Australia	0.0015	3.4683	-5.1692	0.4090	-0.2660	7.0881	-1.5961	-1.4776	6/01/93 – 5/30/03
New Zealand	-0.0025	3.5491	-3.9052	0.4006	0.0799	6.9989	-1.0979	-1.0221	6/01/93 – 5/30/03
Japan	0.0042	4.1392	-7.6854	0.5641	-0.9030	11.8159	-2.2127	-2.2076	6/01/93 – 5/30/03
Britain	-0.0021	3.4234	-4.2212	0.2624	-0.0600	7.0214	-2.2767	-2.2573	6/01/93 – 5/30/03
United States	-0.0035	3.7792	-3.7074	0.4783	-0.1928	5.3586	-1.2363	-1.1663	6/01/93 – 5/30/03



is the formation of a currency union, modeled perhaps on that of the Caribbean. Jayaraman (2003) examines this proposal but finds that a number of the preconditions for such a union, including levels of intra-country trade, correlations in export prices and factor mobility, are not satisfied and concludes that dollarisation remains the most viable option.

In an attempt to find solutions to the economic dysfunction of the Pacific island countries, the Australian Government (Australia 2003), taking its lead from scholarly debate, proposed that a single economic and political community could be established, with the Australian dollar becoming the regional currency. There will be much political discussion, both within Australia and within the Pacific island countries, as to whether this is appropriate. This study addresses some of the empirical support for the Australian dollarisation of the Pacific. The political ramifications of such a decision are left for other studies.

Dollarisation

Dollarisation is the process whereby a country forgoes its own currency and adopts that of another country. The seeming success of the European Union and its single currency and the US dollar as the unofficial currency of many developing economies has encouraged the debate as to whether dollarisation is a suitable solution for the problem of developing economy instability. During the 1990s many developing economies were urged by the International Monetary Fund to float their exchange rates in an attempt to enhance economic development. However, the position of the Fund has changed—partly as a result of the 1997 East Asia currency crisis—and in the early part of the new century the prescription for exchange rate regimes is less clear cut. Mechanisms such as currency boards, pegs

and dollarisation are back on the agenda and are being broadly debated in the circles of development economics.

The arguments in favour of dollarisation in developing economies are outlined succinctly by Berg and Borensztein (2000). Pegs and currency boards can become targets for currency traders and this is particularly problematic for small, fragile economies. By dollarising to a large, liquid currency, the chances of falling victim to a speculative attack are significantly diminished. Likewise, it is less likely that major investors will suddenly withdraw capital if there is no fear of a sudden or sharp devaluation. This argument suggests that the currencies of the island nations of the Pacific would be less prone to speculative attacks and, more importantly, a significantly more attractive destination for foreign investment than has previously been the case if they were to use the Australian dollar as the official currency. Duncan (2002) proposes Australian dollarisation of the Pacific island nations as a method to reduce government costs, stabilise monetary policy (indeed, remove the monetary policy responsibility from the island nations), and fix interest and inflation rates to those of Australia. Additionally, as dollarisation may eliminate the potential for sharp revaluations in the currency—at least with respect to the currency it is dollarising against—the increased currency stability will promote increased trade between the economies. Arguments in favour of dollarisation to the Australian dollar are based primarily on the fact that, in the past, Australia has been the major trading partner of the Pacific island countries (de Brouwer 2000).

For better or for worse, Australian dollarisation would tie the countries of the Pacific to Australia, and once the process commenced, it would be extremely difficult to reverse. Berg and Borensztein (2000) observe that the few cases of a reversal of



dollarisation are in newly independent countries, such as those of the former Soviet Union, previously dollarised to inconvertible currencies. Alternatives, such as currency boards, may be changed as conditions merit. In most discussions of Pacific dollarisation there has been a direct leap from the idea of dollarisation to the implementation of the Australian dollar as the primary currency, rather than the US dollar, the Japanese yen, the New Zealand dollar, or even the French franc, all of which may have equal claims. Several countries already use the Australian dollar but several also use the New Zealand dollar and the US dollar, and Japan is the largest aid donor in the region.

A significant argument made in favour of dollarisation in the Pacific is that it would result in interest rate stability. Duncan (2002) argues that interest rates would be 'largely determined in Australia' (Duncan 2002:145), and hence would offer some monetary policy stability to the Pacific island countries. However, it is unlikely that interest rates would be similar to those of Australia. Any issue of government debt would attract a risk premium due to the significantly greater risk of default, effectively increasing interest rates at a country level. While, as noted, dollarisation may remove the ability of various governments to print currency as a way of managing deficits, it does not mean that the dollarising nation immediately inherits the stability of the country to whose currency it is dollarising. Certainly, the issuance of bonds and their efficient servicing is a preferable way to manage government debt, but should a government choose to default on the bonds, the results are in every way as disastrous as the money-printing remedy. A cessation of capital inflow at that point is not improved simply because the capital is (not) in Australian dollars. Berg and Borensztein (2000) point out that the issue of dollar-denominated debt is effectively the same as dollarising and then

issuing government debt, as in each case the debt has eliminated exchange rate risk. Issuing US or Australian dollar-denominated debt would be a far simpler exercise for a Pacific island government than going to the extreme of dollarising the entire financial system.

Further, when Berg and Borensztein examine the borrowing practices of Argentina, which has both peso and US dollar-denominated debt, they observe that while a spread between the two types of debt exists, the interest rate of the US dollar-denominated debt is still significantly higher than that of developed countries, reflecting the default risk inherent in the bonds. While dollarisation may make borrowing a little cheaper for the Pacific nations, it will still come at a price higher than that which would be charged to Australia. It would also be difficult for many Pacific island nations to find buyers for their bonds: government fiscal management has not been a strength of these countries, and their ability to repay loans is questionable.

Seigniorage is also lost when a country dollarises. While this may not account for a great deal of revenue, its loss may be felt keenly by a small economy. Proposals for dollarisation often include a sharing arrangement for seigniorage and it is anticipated that the Pacific island nations would pursue such opportunities before agreeing to adopt any form of dollarisation. It is possible that smaller countries such as Australia or New Zealand would be willing to share seigniorage with the Pacific countries; it is less likely that the United States would be prepared to do so.

An alternative to dollarisation is the formation of a currency union. A currency union has the benefit of allowing the Pacific countries unity, while preserving their independence from former colonial powers. As such, it may be a more palatable option to Pacific leaders. Such a union would see



individual members give up their individual currencies and join a centrally administered organisation much like that of the European Union. Berg, Borensztein and Mauro (2002) observe that a benefit of a currency union is improved central bank independence and the promotion of monetary and fiscal discipline. They also point out that a common currency will promote intra-regional trade. Seignorage is retained and a sharing arrangement could be negotiated between countries joining the union. Another benefit is that the currency union may promote good governance practices throughout the region. Indeed, by promoting a common currency it is more likely that there will be subsequent improvements in central bank and governmental accountability as the Pacific island countries will be required to maintain credibility. The adoption of a foreign currency would eliminate this necessity; less accountability is not ideal for this region.

Finally, recent work by Huang and Wei (2003) finds that monetary regimes such as currency boards and dollarisation are likely to fail in countries with high levels of corruption. They find that a 'conservative central banker' is preferable to exchange rate-driven monetary regimes under corruption, and question the ability of low inflation targets and currency boards to motivate ethical behaviour in governments.

Empirical support for dollarisation

While much discussion has taken place about the macroeconomic support for dollarisation, little time-series analysis has been performed. It is of interest, therefore, to determine whether there is any empirical support for the idea that the Australian dollar is a related currency to the currencies of the Pacific island countries. It is to be expected that if there are significant trading

relationships and other economic ties between Australia and the Pacific island countries, this will be reflected in their currency relationships. Studies of currency relationships generally fall into two categories: those using regression analysis, as per Frankel and Wei (1994); and those using cointegration analysis as per Aggarwal and Mougouè (1996). This study uses both methods, as per Bowman (2004a, 2004b).

Before using regression analysis, tests for stationarity should be made. Three unit root tests are used in this study: the Augmented Dickey-Fuller (ADF) test (Dickey and Fuller 1981), the Phillips and Perron (PP) test (1988) and the Zivot and Andrews (1994) test for unit roots in the presence of structural breaks. The first two tests, both of which test the null hypothesis of a unit root, are widely used in the currency literature (for example, Baillie and Bollerslev 1989, Bowman 2004b). However, the existence of breakpoints in the data, often caused by regime changes, may result in misspecification if tests do not incorporate adjustments for structural breaks. The Zivot and Andrews test can be used to determine stationarity in the presence of a structural break. The Zivot and Andrews test has the added advantage of dynamically determining the location of a breakpoint—it does not require visual identification of the break and hence is not susceptible to arbitrary period selection.

The results of these tests (Table 2) indicate that unit roots are present in most series. The ADF and PP tests fail to reject the null hypothesis of a unit root for any of the currencies examined, although the results differ slightly when the Zivot and Andrews test is used. Breakpoints are identified in the Papua New Guinea kina, the Solomon Island dollar, and the British pound, and the null hypothesis of a unit root is rejected in each case. If these currencies do in fact contain breakpoints, then ADF and PP



Table 2 Unit root tests

	Papua New Guinea	Fiji	Solomon Islands	Tonga	Vanuatu	Australia	New Zealand	Japan	United Kingdom	US
Augmented										
Dickey-Fuller	-2.5419	0.2004	-1.1301	-1.5544	-0.2884	-1.5961	-1.0979	-2.2127	-2.2767	-1.2363
Phillips-Perron	-3.0683	0.2304	-1.3810	-1.5914	-0.3104	-1.4776	-1.0221	-2.2076	-2.2573	-1.1663
Zivot and Andrews										
t-statistic	-3.9996*	-1.6807	-4.1437*	-2.3613	-2.7061	-2.3367	-2.4379	-3.6077	-4.4632*	-2.7356
λ	0.23	0.66	0.86	0.96	0.89	0.96	0.92	0.53	0.66	0.89
Date of break	9/20/1995	1/21/2000	1/04/2002	1/02/2003	4/09/2002	1/01/2003	8/06/2002	9/30/1998	1/20/2000	4/15/2002
Number of lags	8	10	11	8	9	8	9	10	2	9

Note: ** Significant to 1 per cent

* Significant to 5 per cent

US dollars denominated in Swiss francs, all other currencies denominated in US dollars. Both Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) tests use intercept and trend specifications unless noted otherwise and default lag lengths. There is generally no evidence to reject the null of a unit root. However, the Zivot and Andrews test identifies breakpoints and rejects the null of a unit root for the Papua New Guinea kina, Solomon Islands dollar and British pound.

Table 2a Zivot and Andrews calculated t-statistics

λ	1 per cent	5 per cent	10 per cent
0.1	-4.27	-3.65	-3.36
0.2	-4.41	-3.80	-3.49
0.3	-4.51	-3.87	-3.58
0.4	-4.55	-3.94	-3.66
0.5	-4.55	-3.96	-3.68
0.6	-4.57	-3.95	-3.66
0.7	-4.51	-3.85	-3.57
0.8	-4.38	-3.82	-3.50
0.9	-4.26	-3.68	-3.35



results are likely to be misleading as they do not adjust for structural changes in the data, and therefore the null hypothesis of a unit root can be rejected for these currencies.

Having confirmed that most currencies examined here are likely to be characterised as unit root processes, an initial investigation into currency relationships was made using a standard OLS regression as per Frankel and Wei (1994), modeled such that

$$\Delta \ln S_c = \alpha + \beta_1 \Delta \ln S_{USD} + \beta_2 \Delta \ln S_{AUD} + \beta_3 \Delta \ln S_{NZD} + \beta_4 \Delta \ln S_{JPY} + \beta_5 \Delta \ln S_{GBP} + \varepsilon_i \quad (1)$$

where S_c represents the Pacific island country currency, S_{USD} represents the US dollar, S_{AUD} represents the Australian dollar, S_{NZD} represents the New Zealand dollar, and S_{GBP} represents the British pound, with daily currency data denominated in Swiss franc.

The results of this regression are shown in Table 3, with statistically significant results highlighted in bold. The evidence for the use of the Australian dollar in the Pacific is not compelling. Of the five Pacific island currencies, only the Papua New Guinea kina is a 'floating' currency, and it is the kina which shows the least support for a relationship with the Australian dollar. Indeed, the kina is highly related to the US dollar (93 per cent) and hence the traditional notion of dollarisation seems to be the most appropriate, if existing currency behaviour is retained. While there remains the likelihood of significant central bank intervention, the kina nonetheless seems to be most affected by movements in the US dollar, and the weighting for the Australian dollar is irrelevant.

The currencies of Fiji and Vanuatu likewise feature the US dollar most significantly in their basket of currencies. Vanuatu and Fiji both have currency pegs, and the implication of the regression seen here is that they peg primarily, if not entirely, to the US dollar. The high R^2 values indicate that

the equations are reasonably well specified: there is nothing here to suggest that the Australian dollar has a significant weighting in the respective currency baskets, and hence the decision to change to the Australian dollar would need to be supported by significant economic fundamentals, as this implies that a transition to the Australian dollar would not be economically straightforward. Only the Tongan pa'anga seems to feature the Australian dollar significantly in its currency basket—with the Australian dollar comprising around two-thirds of the basket, while the British pound constitutes the remainder. The Solomon Island dollar also appears to be weighted around 55 per cent toward the British pound, with the US dollar making up the remainder. It would not appear that the pegs implemented by the Solomon Islands, Fiji or Vanuatu feature the Australian dollar.

Robustness checks can be made using cointegration testing. The Johansen test for cointegration (Johansen and Juselius 1990) is again commonly used in the currency literature (Aggarwal and Mougouè 1996, Zhou 1998) to test for long-run relationships between currencies. However, if not modified to adjust for structural breaks, it may also misspecify relationships. The Gregory and Hansen (1996) test for cointegration adjusts for structural breaks, again dynamically determining the location of the breakpoint to avoid arbitrary period selection.

Johansen cointegration testing (Table 4) indicates that significant long-run relationships exist where not immediately identified by regression testing. Fiji is found to have significant long-run relationships with Australia, New Zealand, and the United Kingdom, as well as with the US dollar (as identified in regression testing). Likewise, there is evidence of long-run relationships between Tonga and both Australia and New Zealand, and between Vanuatu and Australia, New Zealand and



Table 3 Basic regression relationships, 1993–2003

	β_1 US\$ (t-statistic)	β_2 A\$ (t-statistic)	β_3 NZ\$ (t-statistic)	β_4 JPY (t-statistic)	β_5 GBP (t-statistic)	R^2	DW
Fiji (dollar)	0.9611 15.37	0.0207 0.67	-0.02 -0.61	0.02 0.79	0.0080 0.23	0.69	2.25
Papua New Guinea (kina)	0.9293 11.24	-0.0314 -0.75	0.03 0.69	0.04 1.38	-0.0002 -0.01	0.35	1.93
Solomon Islands (dollar)	0.4654 6.99	0.0258 0.77	0.00 -0.14	0.01 0.34	0.5382 15.05	0.58	2.17
Tonga (pa'anga)	-0.2438 -5.66	0.6936 32.06	0.02 1.11	0.03 2.11	0.4485 19.36	0.80	2.70
Vanuatu (vatu)	0.9520 34.23	0.0102 0.73	0.01 0.41	0.01 0.73	0.0178 1.17	0.83	2.08

Note: All currencies denominated in Swiss francs. The basic regression of Equation 1 provides little support for the Australian dollar as a choice of currency. The greatest level of support is for the US dollar, with most currencies strongly linked. There is also more support for the British pound, which is significantly related to both the Tongan pa'anga and the Solomon Island dollar. Despite the levels of trade between Australia and the Pacific island nations, the only currency with support for the Australian dollar is the Tongan pa'anga. The Japanese yen is not linked with any of the currencies during this period.

the United States. However, cointegration testing indicates only the presence of relationships; it does not indicate the strength of the relationships or define a weighting, as the Frankel and Wei regression analysis does.

While the Johansen test does not indicate the presence of cointegration for the Papua New Guinea kina or the Solomon Islands dollar, this may be because the currencies contain breakpoints (as identified by the Zivot and Andrews test), and so the results of the Gregory and Hansen test (Table 5) better specify relationships for these currencies. Indeed, the Gregory and Hansen test finds evidence of cointegration only for these currencies, and only the Solomon Islands/Australia and Solomon Islands/New Zealand relationships are significant to 10 per cent. It is interesting that no long-run evidence is found to confirm the results of regression testing, which indicated strong US dollar relationships in each case. Again, the presence of stationarity and structural breaks may be misspecifying the relationship here.

Overall, from both regression and cointegration testing, there is mixed evidence as to whether the Australian dollar is significantly related to the currencies of the Pacific island countries. Regression analysis indicates that at least four of these currencies, including the floating Papua New Guinean kina, would be more suited to US dollarisation. These results imply a significant level of unofficial dollarisation already exists. Cointegration testing, while offering a little more support for long-run relationships with the Australian dollar, finds equivalent support for the US dollar. It should be noted that cointegration testing does not offer a ranking of importance, merely an indication of the existence of cointegration.

Correlations between the five Pacific island currencies shed light on currency dynamics within the region (Table 6). The currencies of Papua New Guinea and the Solomon Islands are highly correlated with each other but not with the remaining



countries, while the currencies of Vanuatu, Fiji and Tonga are all highly correlated. These are interesting results, considering that the kina is a floating currency while the Solomon Island dollar is a managed peg, and appears to be weighted to the US dollar and the British pound. Economic relationships may help to explain this: Tonga, Fiji and Vanuatu have significant trading relationships with each other, with Tonga and Vanuatu being dependent on exports from Fiji; while Solomon Islands and Papua New Guinea also trade between each other to a significant degree (International Monetary Fund 2004).

The most interesting change in Pacific import and export composition over the past ten years has been the increasing relevance of Asia, both for imports and as an export destination. Conventional wisdom states that Australia is a significant trading partner for the Pacific island countries, and for this reason the Australian dollar is the most appropriate currency for dollarisation (de Brouwer 2000, Duncan 2002). While Australia remains the largest exporter to the Pacific island countries in US dollar terms,

there has been little change in the level of trade from the beginning to the end of the decade (Figure 1). A large spike in exports during the mid 1990s proved to be temporary. This is not the case for trade with Asia. Exports have risen considerably over the decade, and if past trends continue, Asian exports will eclipse those from Australia in the not-too-distant future. This change is perhaps behind the dominance of the US dollar in the Pacific island currencies; if Asian countries are denominating their goods in US dollars, as is likely, it may be that this increase in trade is responsible for the decisions to peg to the US dollar. Support for the use of the US dollar in these circumstances may be found in prior currency studies of Asia such as Bowman (2004a), which uses Frankel and Wei (1994) regression analysis to show that the currencies of East Asia remain highly related to the US dollar, despite the regime changes seen in the aftermath of the 1997 East Asian crisis.

Overall, exports from Asia to the Pacific island countries (Table 7) have increased over the past decade, while exports from

Table 4 Johansen cointegration test

	Papua New Guinea	Fiji	Solomon Islands	Tonga	Vanuatu
Australia	-	36.06** ^a	-	454.83** ^a	17.47* ^b
New Zealand	-	34.42** ^a	-	16.18* ^a	17.35* ^b
Japan	-	-	-	-	-
United Kingdom	-	29.36* ^a	-	-	-
United States	-	32.24** ^a	-	-	15.56* ^b

Note: ** Significant to 1 per cent

* Significant to 5 per cent

^a Intercept and trend

^b Intercept, no trend

Johansen cointegration testing found no cointegrating relationship between the developed economy currencies and those of Papua New Guinea or the Solomon Islands. Fiji's currency basket showed long-run cointegrating relationships with Australia, New Zealand, the United Kingdom and the United States. Tonga demonstrated long-run cointegrating relationships with the Australian dollar, which was observed from regression testing, and weaker evidence for the New Zealand dollar, which was not. Vanuatu was cointegrated with Australia, New Zealand and the United States at 5 per cent. Lags typically numbered 1-4.



Table 5 Gregory and Hansen cointegration test

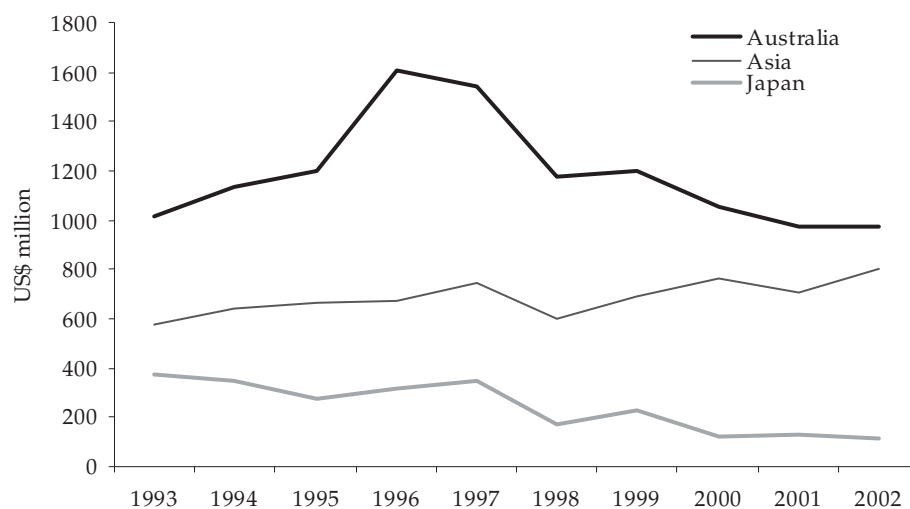
	Papua New Guinea		Solomon Islands	
	t	Date	t	Date
Australia	n.a.	n.a	-4.743356 [^]	24/04/2002
New Zealand	-3.690134	19/06/2001	-4.962797 [^]	1/05/2002
Japan	-4.143921	16/06/1999	-3.987882	8/03/1995
United Kingdom	-3.078221	19/06/2001	-3.716524	31/01/1995
United States	-3.270766	11/06/1999	-4.290791	5/04/2002

Note: * Significant to 5 per cent

[^] Significant to 10 per cent

No evidence of cointegration was found for Tonga, Vanuatu or Papua New Guinea/Australia using the Gregory and Hansen test, confirming the results of the Zivot and Andrews test, which indicates breakpoints only in the currencies of Papua New Guinea and the Solomon Islands. Evidence at significant levels was found only for Solomon Islands/Australia and Solomon Islands/New Zealand. Critical values determined by Gregory and Hansen (1996) are -5.45 (1 per cent), -5.21 (1.5 per cent), -4.99 (5 per cent) and -4.72 (10 per cent).

Figure 1 Value of imports to Pacific island countries, 1993–2002 (US\$ million)



Note: Import demand from Asia (excluding Japan) is growing after a slight decline around the time of the East Asian crisis (late 1997) and is continuing in an upward trend, while imports from Australia have decreased. The spike in Australian imports during the mid 1990s was primarily due to an increase in demand from Papua New Guinea, and may reflect imports of mining equipment. Imports from Japan have halved over the decade.

Source: International Monetary Fund, various issues. *International Financial Statistics*, International Monetary Fund, Washington, DC.



Australia appear to be falling to the Pacific island countries. Papua New Guinea remains the only country whose trade with Australia, in terms of both imports and exports, is greater than with Asia. All other countries now export more to Asia than Australia, and Tonga, Vanuatu and the

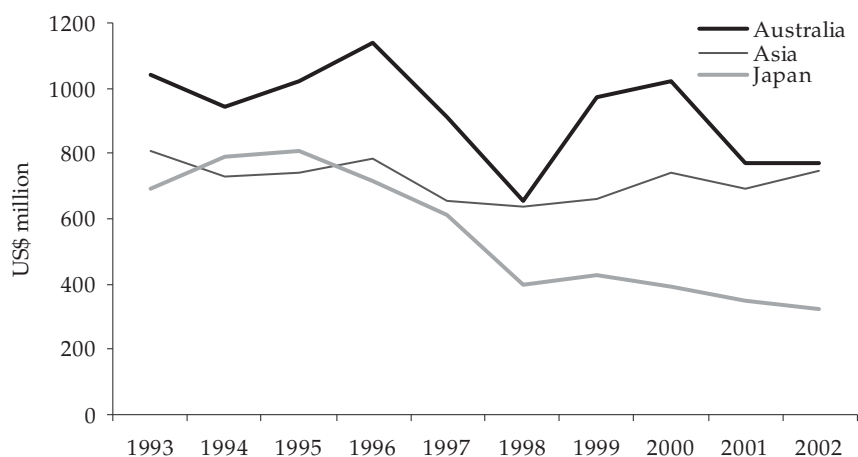
Solomon Islands also import more from Asia than Australia. Only Papua New Guinea and Fiji continue to send a considerable share of their exports to Australia (Table 8). In each case, the importance of Australia as an export destination has diminished over the decade. Exports from Papua New Guinea to

Table 6 Pacific island currency correlations, 1993–2003

	Fiji (dollar)	Papua New Guinea (kina)	Solomon Island (dollar)	Tonga (pa'anga)	Vanuatu (vatu)
Fiji (dollar)	1.0000				
Papua New Guinea (kina)	0.3917	1.0000			
Solomon Island (dollar)	-0.0019	0.8326	1.0000		
Tonga (pa'anga)	0.9694	0.5165	0.1763	1.0000	
Vanuatu (vatu)	0.9878	0.2930	-0.1139	0.9404	1.0000

Note: The correlations between nominal island currencies provide more evidence of currency relationships between the island countries than between the islands and the industrial countries. There is a negative relationship between the Fiji dollar and the Solomon Islands dollar, and between the Solomon Islands and Vanuatu currencies. The results indicate there may be two systems of relationships here: one containing Fiji, Tonga and Vanuatu, and the other comprising the Solomon Islands and Papua New Guinea.

Figure 2 Value of exports from Pacific island countries, 1993–2002 (US\$ million)



Note: Exports to Asia (ex Japan) have recovered post 1998 and appear to be increasing, while demand from Japan has deteriorated significantly over the decade.

Source: International Monetary Fund, various issues. *International Financial Statistics*, International Monetary Fund, Washington, DC.



Table 7 Imports of Pacific island countries—Asia and Australia, 1993–2002 (US\$ million)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Imports from Australia										
Fiji	235.97	273.64	336.58	436.84	436.26	359.17	410.92	371.33	333.41	312.56
Papua New Guinea	671.86	762.90	740.76	1039.50	973.08	704.70	668.51	608.51	574.09	589.10
Solomon Islands	46.15	49.89	66.22	71.13	72.87	65.46	68.22	33.83	33.13	31.54
Tonga	13.87	17.04	21.48	22.17	24.11	16.98	14.55	8.49	8.30	11.39
Vanuatu	42.49	33.81	32.04	37.45	34.65	30.69	35.10	31.07	27.26	29.33
Total	1,010.34	1,137.28	1,197.08	1,607.09	1,540.97	1,177.00	1,197.30	1,053.23	976.19	973.92
Imports from Asia ^a										
Fiji	134.13	202.61	209.35	195.24	198.19	203.70	213.50	193.45	204.66	285.46
Papua New Guinea	369.13	372.50	365.90	389.60	448.61	306.47	356.46	427.16	358.78	389.88
Solomon Islands	45.40	45.26	50.02	48.57	67.60	57.02	61.49	61.84	54.97	52.83
Tonga	7.30	5.31	5.82	5.29	6.08	5.10	17.02	29.31	26.41	27.66
Vanuatu	15.87	17.37	31.85	33.02	28.74	29.43	44.29	47.74	57.32	47.16
Total	571.83	643.05	662.94	671.72	749.22	601.72	692.76	759.5	702.14	802.99
Imports from Japan										
Fiji	79.45	66.29	62.34	51.57	66.28	39.53	47.11	30.50	28.70	35.47
Papua New Guinea	207.73	197.40	133.41	169.70	171.92	106.70	69.97	49.52	51.63	50.52
Solomon Islands	14.26	18.22	15.75	16.65	18.41	9.74	18.78	6.62	4.07	2.32
Tonga	4.26	4.69	4.49	5.12	4.12	3.50	3.92	12.52	3.06	1.91
Vanuatu	68.19	64.89	61.92	75.48	91.80	14.34	90.82	23.70	43.72	25.54
Total	373.89	351.49	277.91	318.52	352.53	173.81	230.60	122.86	131.18	115.76

^a The definition of Asia used here includes exports from other Pacific island countries.

Note: Total value of exports in million US dollars.

Source: International Monetary Fund, various issues. *International Financial Statistics*, International Monetary Fund, Washington, DC.



Table 8 Exports from Pacific island countries—Asia and Australia, 1993–2002 (US\$ million)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Exports to Australia										
Fiji	101.98	118.86	148.16	202.00	200.43	211.98	233.51	173.16	123.87	119.88
Papua New Guinea	933.71	822.05	866.77	930.39	706.12	441.58	733.81	843.33	646.49	645.47
Solomon Islands	1.79	1.69	3.82	2.44	3.04	3.75	2.17	2.64	1.34	0.78
Tonga	1.23	0.68	0.71	0.73	0.32	0.34	0.40	0.35	0.37	0.36
Vanuatu	1.17	1.15	3.60	0.63	0.97	0.48	0.62	0.47	1.73	2.57
Total	1,039.88	944.43	1,023.06	1,136.19	910.88	658.13	970.51	1,019.95	773.80	769.06
Exports to Asia ^a										
Fiji	43.66	41.85	124.04	137.00	97.82	93.34	105.60	134.89	123.91	130.57
Papua New Guinea	678.34	624.10	535.98	549.51	476.55	441.90	466.51	490.65	479.28	486.13
Solomon Islands	57.55	57.96	74.90	80.54	71.42	93.58	75.59	58.89	53.85	65.76
Tonga	0.07	0.30	0.24	0.49	0.56	0.46	0.58	1.29	1.16	1.06
Vanuatu	25.51	4.61	4.37	13.20	7.52	9.46	14.15	55.17	36.51	64.69
Total	805.13	728.82	739.53	780.74	653.87	638.74	662.43	740.89	694.71	748.21
Exports to Japan										
Fiji	33.26	37.22	36.14	49.18	29.48	29.17	31.90	28.23	31.22	38.99
Papua New Guinea	563.23	661.14	664.46	551.32	456.27	290.98	324.92	317.28	279.17	252.48
Solomon Islands	83.07	79.01	91.36	103.95	105.56	54.53	52.95	20.98	17.09	18.78
Tonga	9.43	7.32	7.01	5.59	5.12	2.94	7.36	8.68	12.20	10.83
Vanuatu	5.90	6.30	7.28	8.12	16.87	22.43	9.49	16.29	6.50	3.89
Total	694.89	790.99	806.25	718.16	613.30	400.05	426.62	391.46	346.18	324.97

^a The definition of Asia used here includes exports from other Pacific island countries.

Note: Total value of exports in millions of US dollars.

Source: International Monetary Fund, various issues. *International Financial Statistics*, International Monetary Fund, Washington, DC.



Australia have fallen from around 35 per cent of total exports to around 24 per cent. Similarly, Fiji has seen its share of total exports to Australia fall from around 22 per cent in 1993 to around 19 per cent in 2002. Fiji has seen Asia become a greater market for exports, while the United States, Japan and Asia are now taking the bulk of Papua New Guinea's exports. The evidence to support Australia's position as the dominant economy in the Pacific region is significantly weaker than that of a decade ago, and this fact alone is a good reason to reassess calls for the Australian dollarisation of the Pacific.

Conclusion

With corruption and recurrent political and economic turmoil being features of the Pacific island nations, the Australian Government has raised the prospect of dollarisation to the Australian dollar as a panacea for the region's ills. There has been some academic discussion about the perceived benefits of dollarisation, and the weight of argument has been in favour of the idea. However, analysis of recent currency behaviour suggests that this may not be the best solution if significant structural adjustment is to be avoided. Ideal candidates for dollarisation are small economies with close trade and economic links to the originating country. But evidence suggests that trade links are changing in the Pacific. US dollarisation, the *de facto* standard in Asia, or a move to a common currency may be preferable to adopting the Australian dollar. Further, recent contributions to the less-developed economy currency regime debate such as Huang and Wei (2003) indicate that dollarisation may not be the best regime for an emerging economy plagued with corruption.

Of course, there are many reasons why the Australian Government may find it beneficial for the region to 'aussify', rather than 'dollarise'. However, these reasons fall into the domain of political economy, rather than empirical economics, and there is evidence presented here that questions such enthusiastic support for the adoption of the Australian dollar. If the trends of the past decade continue, Asia is likely to become the dominant trading partner for most Pacific island countries, and many of the arguments that favour the use of the Australian dollar over other currency options may be overtaken by events.

Notes

- ¹ See for example 'PM cops it on the nose as islands refuse to fall into line', Tom Allard, *The Sydney Morning Herald*, 15 August 2003.
- ² The International Monetary Fund states that 'the current exchange arrangement seems to serve Tonga well' (International Monetary Fund 2003:13).

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