Are Pacific Island Economies Growth Failures?
Geo-Political Assessments and Perspectives

John Gibson
University of Waikato
and
Visiting Research Fellow
Macmillan Brown Centre for Pacific Studies
And
Karen L. Nero
University of Canterbury
Macmillan Brown Centre for Pacific Studies
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John Gibson*
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Visiting Research Fellow
Macmillan Brown Centre for Pacific Studies

And

Karen L. Nero☼
University of Canterbury
Macmillan Brown Centre for Pacific Studies

Abstract:
Many Pacific Island economies have found it difficult to achieve sustained economic growth and hence sustained growth in living standards. This is despite very high per capita inflows of external finance, in the form of both overseas aid and remittances. Consequently, many external assessments and a growing minority of internal opinion are critical of this apparently poor performance. Questions have been raised both about the viability of some Pacific economies and about the appropriate policy responses. This chapter 1) assesses how well Pacific economies are performing and identifies two analytical biases in recent assessments relative to other economies of comparative size and characteristics, 2) seeks to better understand Pacific economies, using GIS modelling to help visualise and identify factors contributing to national and regional differences in Pacific economies, and identifying data bias problems in donor and National System Accounts data (missing or under-estimated food production, contributions of citizens overseas), and 3) discusses the implications for future research and donor approaches to supporting Pacific nation economies and the Millennium Development Goals especially of reducing poverty.

Keywords: Economic Performance; Growth; Pacific Islands; Remittances; Safety Nets; SNA-93 Household Sector; Wealth Systems

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*Department of Economics, University of Waikato, Private Bag 3105, Hamilton, New Zealand. Fax: (64-7) 838-4035. E-mail: jkgibson@waikato.ac.nz.

☼ Macmillan Brown Center for Pacific Studies, University of Canterbury, Private Bag 4800, Christchurch, New Zealand. Fax (64-3) 364-2002. E-mail: karen.nero@canterbury.ac.nz.
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Are Pacific Island Economies Growth Failures?

Geo-Political Perspectives

Introduction

Many Pacific Island economies have found it difficult to achieve sustained economic growth, and Pacific Island governments and Pacific Islanders, both in the islands and in Aotearoa, seek ways to achievable sustainable economic growth to fund improvements in education, health, and general living standards. While external assessments generally miss or undercount food production and its related generation of cash standard statistical account assessments focused upon the market economy concur that Pacific economies perform poorly. For example, Sampson (2005) finds that after controlling for OECD membership and whether a country is an oil exporter, the Pacific states grew more slowly than countries in any other region of the world over 1995-2003. This is despite high per capita inflows of external finance, in the form of both overseas aid and remittances. Many experts are critical of this apparently poor performance, placing the blame on poor institutions (Chand 2001), aid inflows (Hughes 2003), bad policy settings (Chand 2003, Gosarevski, Hughes and Windybank 2004), and especially governance (Duncan 2005). The perspective that Pacific Island economies are poor performers has become the template through which current economic updates are portrayed, despite considerable differences among nations within the region. Are these perspectives now colouring analyses of both regional and national economies and affecting the proposed solutions?

In Part 1 of this chapter we critically analyse how poorly the region’s nations are doing in comparison with other similar nations (and how such similarity is best measured), and the degree to which governance issues contribute to economic performance. There is a large geographic component to our analyses. This is appropriate given that this region covering one-third of the globe that primarily consists of small volcanic and atoll islands plus the few large continental islands of the southwest Pacific. Analyses of spatio-economic factors (i.e. size, natural endowments, environmental fragility and vulnerability) have been augmented by more detailed analyses of economic remoteness and spatial-correlations. Socio-cultural factors (i.e. size and diversity of residents, rates of migration and overseas workers, cultural practices) considered include type of relationship and economic strength of former colonial powers. In this section we present some key variables in the form of thematic maps.

How can we best understand Pacific economies? In Part 2 we assess the systematic ways in which poor data hinder our analyses. Poor data especially on the Household Sector of National Accounts result in systematic and widespread under-estimations of the contributions of local fisheries and agricultural food production that provide the primary support both of food and access to cash income for a significant percentage of Pacific peoples. In this part of the chapter we consider well-documented problems that have been identified in valuing the household sector and food production (which continues to be the most productive sector of many Pacific nations). We consider how Pacific wealth production and “capital” creation differ from those of Western
societies, and the role of women in these processes. We briefly review a few cases demonstrating key features of the systems through which Pacific peoples generate wealth in a complex interchange between food production, labour, and soft (textile) and hard (stone and bead) currencies. We consider the mechanisms through which Pacific peoples continue to connect food production and wealth, today linking customary and introduced monetary systems.

Pacific Islanders draw upon and adapt their production and existing wealth systems to provide support for the education of their children, access medical services at home and overseas, and provide capital to fund housing, clinics and transportation, as well as for development projects that to a large extent Western banking practices have been unable to fund. These transfers serve both as short-term “insurance or safety nets” within and across nation-states, and long-term investment in both social and financial capital systems. Remittance transfers are one of the key mechanisms through which Pacific peoples attempt to mediate their participation with increasingly globalised market economies; at best most analyses capture cash remittance transactions but do not value the goods, materials and textiles also transferred, often with a bias toward transfers to the islands rather than looking at the net effects that include transfers from the islands to the richer countries that host the Pacific diaspora.

We attempt to bridge the historical disjuncture between Western understandings and valuation of Pacific food production systems and attempts to “develop” the systems, and more recent archaeological, anthropological and development analyses. We anticipate that with better understanding of these contemporary production and wealth systems, they can be supported and developed through international aid and trade, rather than undermined in ways that retain the legacies of earlier colonial eras through which labourers, minerals (i.e. phosphate) and agricultural products (i.e. sugar, coconuts) were removed from the region. Pacific nations reassumed political sovereignty in the mid to late 20th Century; supporting contemporary economic power throughout the region is vital not only to the Pacific nations but to their partners in Aotearoa/New Zealand and Australia.

While recognizing hardship and poverty in the Pacific (see especially Abbott and Pollard 2004) and avoiding simplistic views of rarely attained sustainable rural development resulting in shared wealth (Schoeffel 1997), we argue that a greater analytical focus on the intersections between indigenous production sectors and national and international transactions and supporting effective strategies may assist the region to meet its Millennium Development Goals (MDG). Regional and national networks constantly shift people, moneys (remittances) and products among Pacific Islanders in the islands and in Aotearoa and Australia. How may remittances from Pacific family members overseas be best understood and maximized? What are the contributions of women and the exchanges of the women’s production of textile wealth? While we recognize the MDG goals of universal primary education and health (Goals 2, 4, 5, 6), we focus on the MDG goals 1) eradicate extreme poverty and hunger, 3) promote gender equality and empower women, 7) ensure environmental sustainability and 8) global partnership for development. Good governance may be part of the solution, but we focus on identifying conceptual problems in regional analyses and reducing misunderstandings of Pacific production and wealth. In the process of identifying data and conceptual gaps from both regional and grounded perspectives, we seek ways to contribute to design ways to better support two of the
ADB’s strategies of Inclusive Social Development and Sustainable, Pro-Poor Economic Growth” (Abbott and Pollard 2004:84).

The implications of this critical review are developed in Part 3. At present much of the Pacific is often omitted from international comparisons, due to poor or incomplete data. What differences might these omissions make? Our analyses of conceptual and factual problems in current data are presented not to correct existing data, but to help identify possible actions that might be taken and practical ways in which better data might make differences in policies and practices, and problems that might be avoided with better data. For instance regional aid and NGO assistance might help conceptualize and strengthen National Accounts protocols for collecting data on the Household Sector. OECD statisticians now recognize these activities as foundational to the Household Sector (System of National Accounts (SNA-93) and also that in a number of Pacific nations these activities represent the most productive sector. The SNA further recognizes the need to model and develop the tools that can more efficiently and better capture this production in ways that can be used comparatively. Better data should assist Pacific nations to work with overseas aid donors and NGOs to achieve sustainable economic growth.

What percentage of donor attention and support are currently directed toward this Household Sector including subsistence and the informal economy? How could existing donor programmes effectively serve as models toward the alleviation of poverty and other Millennium Development Goals (MDGs)? Increased well-designed donor support for food production could have important ramifications for increased participation in entrepreneurial market and transportation developments. NZAID and other donors are working in this direction through their support of agricultural seed banks to retain diversity (Solomon Islands), supporting urban agricultural production (Port Moresby), and earlier and current projects providing communication and transportation support to local entrepreneurs reach distant markets. Without good data communities and nations seeking export dollars may be drawn into export projects without the necessary environmental or economic assessments to ensure their sustainability, and in the process could lose food production capability as well as lose the desired export income. In the case of poorly planned development or environmental disasters better data are needed to support restitution. Working with banks to reducing costs of sending remittances could make significant contributions to national economies.

Most important, we must move beyond a template of failure that too often centres the causes upon local communities and their governance or institutional practices without providing at least equal attention to partnerships between Pacific Forum nations and international organizations as they assess and respond to regional transportation, information technology (IT) and assessments of global weather change and effective responses in this especially vulnerable world region.

Before moving into the substantive part of the chapter it is also important to emphasize what is not done in this study. In particular, the present chapter makes no attempt to repeat general surveys of the Pacific economies, such as AusAid (2006). For one thing, the sizes and growth rates of these economies as conventionally measured have already been thoroughly documented, and there is no need to repeat that work here. But more importantly, the informal sectors of the Pacific economies,
and agriculture and fisheries in particular, are a fundamental feature of the region. The contribution of the subsistence and food exchange sectors are of such importance that ignoring them leads to a serious understatement of the standard of living in many Pacific Islands countries. Moreover, it is crucially important that any policy prescriptions which aim to increase the traded sectors do not undercut production which is less well counted, as this can lead to rising GDP levels while standards of living stagnate or even decline. The present chapter therefore takes a more comprehensive view of Pacific Islands’ productivity, as a reminder that appropriate policies should build on the full range of existing strengths, and be careful to avoid unbalanced developments which may be an improvement in some respects while damaging in others.
Part I: Regional Approaches and Comparisons

How best can we understand Pacific nations and their economies? First, we must interrogate how we understand the region itself.

Two caricatures of Pacific Island economies often seem to occupy the attention of the New Zealand public and policy makers. One is likely to be based on first hand observation from pleasant holidays in Polynesian atolls and frames these economies amidst a background of pleasant ocean breezes, beaches and coconut trees. The other seems to be based more on media reports and other commentary and sees them as actual or potential failed states, with unruly and sometimes undemocratic rulers, breakdowns in governance and law and order.

Polynesia as a part of the Pacific Region
Like most caricatures, there are elements of truth in both but also a substantial amount of relevant detail that is omitted. The problem with the first view, of pleasant Polynesian atolls, is that it focuses attention on a tiny minority. The largest single population group in the Pacific are the Highlanders of Papua New Guinea who now number well over two million—as many as the combined total population of all other countries in the Pacific Islands. This population live very far from beaches and coconut trees, at altitudes above 1200 metres, and cultivate largely temperate crops.

Figure 1  Pacific Population and GDP Pie Charts

Thus the part of the Pacific that New Zealand knows best – Polynesia – is a tiny and not necessarily representative fraction of the total Pacific. Specifically, in terms of population, Polynesia is only four percent of the total (Figure 1). Although Polynesians are richer on average than Melanesians, even in economic terms Polynesia is dwarfed by the Melanesian nations (Polynesia is home to nine percent of regional GDP).

The second caricature, of failed states and poor governance, is reinforced by recent tragic events in Fiji, Tonga and the Solomon Islands. Academic research also highlights the human cost of these failures. According to estimates made by Duncan (2005), in the absence of poor governance, per capita GDP in Papua New Guinea (PNG) would have been double what it actually was in 2003 and one-third higher for Fiji. The problem with such claims is that although good governance helps economic growth on average there are plenty of exceptions, so it is neither a necessary nor sufficient condition. A case in point is Italy, which is

…notorious for its political instability, inflation, massive public debt, and clientelism. Its political and economic institutions are often derided and labelled dysfunctional. Yet, in historical perspective, the country has frequently performed better than its more stable and “efficient” European neighbours…

Tolliday (2000), pp. 241

A closer example is New Zealand, which despite comprehensive economic reform and textbook public management since the mid-1980s still has only a mediocre growth experience (McCann, 2006). Hence the reverse could also hold: despite Pacific Island countries doing many things wrong, they perhaps would not have grown much faster doing things right. The difficulty of examining this claim, compared with the ease of observing the growth and governance anomaly that is Italy, is that simple comparisons with neighbouring countries are unlikely to be valid. The Pacific Island countries differ dramatically in terms of scale, remoteness and insularity when compared to their neighbours. We eventually examine this issue of suitable comparators but start first with the issue of governance.

Effects of Governance on Pacific Economies

Expert commentary on the Pacific Island countries highlights the importance of governance failure (Duncan, 2005). Yet evidence that these countries have unusually poor governance and that this is costly in terms of slower economic growth and overall poorer economic performance is not widely available. We therefore use indicators for six components of governance from a major World Bank research project that creates consistent indicators from the perceptions of enterprises, citizens and expert respondents in most countries around the world (Kaufmann, Kraay and

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1 These population and economic data are for the 13 Pacific states that are members of the Asian Development Bank, so excludes French Polynesia and New Caledonia and also some of the smallest counties, who would make no difference to the regional comparisons illustrated in the pie charts.
Mastruzzi, 2006). These components are: voice and accountability; political stability; government effectiveness; regulatory quality; rule of law; and control of corruption.2

We use these data on governance indicators to answer two questions:

- First, taking account of some basic features of Pacific Island economies (geography, population and land area; trade and volatility; and initial economic, political, and social conditions, which are each described in more detail in Table 3 below), is the level of governance according to these quantifiable indicators lower in the Pacific than elsewhere?
- Second, what difference do these governance indicators make to the growth performance of the Pacific Island economies, once again taking account of such basic features as geography, population and land area, trade and volatility, and initial economic, political, and social conditions?

To answer these questions we use a sample of approximately 170 countries, which is chosen on the basis of data availability and is also used in other analyses reported later in the chapter. This sample includes up to 14 Pacific Island economies which are listed in the notes to Table 1 below.

According to the results in Table 1, Pacific Island countries have lower levels of governance for only three of the six indicators (and in two of these cases the coefficient is only weakly significant). Moreover, the results in Table 1 do not allow for the possibility of common unexplained components in governance for neighbouring countries (due either to contagion or to unobserved variation from common location or institutions). This common unexplained component for nearby countries, which is referred to by its more technical name of spatial autocorrelation below, tends to reduce the precision of estimated statistical relationships like those presented in Table 1. Consequently, only for the “control of corruption” would there be firm grounds for concluding that governance was worse in the Pacific.

In terms of the second question, of whether governance indicators matter for economic growth, the addition of each of the governance indicators to a cross-country growth equation has very little effect. In particular, the difference in average growth rates between the Pacific Island countries and the rest of the world (after taking account of geography, population and land area, trade and volatility, and initial economic, political, and social conditions) is hardly altered as governance indicators are also included in the growth equation. For example, according to the results in the column headed “government effectiveness” the average growth rate of the 14 Pacific Island economies included in that particular equation is -0.14 standard deviations below that of other countries, after controlling for various features of all of the countries in the sample but not controlling for differences in government effectiveness. Adding government effectiveness to the set of controlling variables reduces the unexplained difference in growth rates only slightly, to -0.115. In other words, differences in government effectiveness between the Pacific and elsewhere seem to contribute only 17% (=1-(-0.115/-0.139)) to the slower growth of the Pacific Island economies. Moreover, none of these differences in average growth rates are

2 While these are available for the 1996-2005 period, although with many gaps for individual countries, the analysis uses averages over 1996-2003 since many of the other explanatory variables are dated from about 2003.
statistically significant and they also do not take into account spatial autocorrelation which further reduces statistical significance (see below).

Table 1: Comparison: Deviation of Average Level of Governance and Growth

<table>
<thead>
<tr>
<th>Deviation of Average Level of Governance or Growth in Pacific Island Countries From Overall Global Average, Controlling for Geography, Population and Land Area, Trade and Volatility and Initial Conditions</th>
</tr>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Coefficient on Pacific Island Countries in Equation for Governance</td>
</tr>
<tr>
<td>(1.51)</td>
</tr>
<tr>
<td>Coefficient on Pacific Island Countries in Growth Equation without Governance indicator</td>
</tr>
<tr>
<td>(1.63)</td>
</tr>
<tr>
<td>Coefficient on Pacific Island Countries in Growth Equation with Governance indicator</td>
</tr>
<tr>
<td>(1.93)</td>
</tr>
<tr>
<td>Sample size</td>
</tr>
<tr>
<td>Pacific countries missing from sample</td>
</tr>
</tbody>
</table>

Note: Results are OLS estimates for models that also include the control variables listed in Table 3. The coefficients for the growth rate equations are for models explaining average per capita GDP growth over the 1987-2003 period, for samples of approximately 170 countries. t-statistics in ( ) from robust standard errors. +=significant at 10% level, * at 5% level, ** at 1% level. The codes for the Pacific Island economies omitted from each sample (due to lack of governance indicators are): COK Cook Islands; FSM Federated States of Micronesia; KIR Kiribati; MHL Marshall Islands; NRU Nauru; PYF French Polynesia; PLW Palau; TON Tonga; TUV Tuvalu.

The implication that we take from the evidence in Table 1 is that claims of governance failure in the Pacific may be overstated. There is clearly a failure to
control corruption but the evidence is less clear-cut for other components of governance. Moreover, the impact of any governance deficiencies is difficult to discern, at least in terms of average economic growth rates. Therefore, although several of the analyses reported below are motivated by the literature claiming growth failures in the Pacific, there are some grounds for doubting the specific role that governance failure is often given in this literature.

GIS Mapping of Regional Variables

We have used Geographical Information System (GIS) maps to engage the reader in reconsidering the complex ways in which geographical factors (i.e. size and type of island, proximity to other islands and strong economies, land and sea resources) intersect with geo-political factors (nature of ongoing links to former colonizer). We have prepared a series of GIS maps of the region highlighting different variables. Due to the small and almost invisible outlines of the smaller Pacific states at this map scale, the island nation’s land mass are shown with the 12-mile limit, and is encircled within its 200 Mile exclusive economic zone (EEZ) to depict country borders in all maps.3 One complication of using the EEZ is that the EEZ for Kiribati is not contiguous. GIS Map 1 (also the Frontispiece), demonstrating Per Capita Gross Domestic Product (GDP) of Pacific Forum countries, exemplifies the type of map used throughout – on which we have colour-coded into five levels of the variable/s under consideration.

The frontispiece depiction of Pacific Forum nations by Gross Domestic Product (GDP) per capita, and the following depiction of Pacific Forum Nations by Gross National Income (GNI) per capita and urban/rural distribution, suggest anomalies in apparent economic performance that may point to complex interactions of both political and geographical realities. For example the complexity of the intersections of geographical and geo-political factors are demonstrated in Map 1 which identifies Palau and the Cook Islands as the top two performers of the Pacific Forum nations, based on per capita GDP. These two countries also have the highest level of per capita GNI and are amongst the most urbanized (Map 2). In this view, the larger nations of Papua New Guinea and the Solomon Islands that enjoy much richer land resources are at the lowest levels of performance. Both Palau and the Cook Islands are Freely Associated with their former colonizer (US and New Zealand respectively). However other Freely Associated States (the Federated States of Micronesia, the Marshall Islands, and Niue are less successful so this factor by itself is insufficient to explain the variations in performance.

3 These EEZ geographic data were obtained from the Pacific Islands Applied Geoscience Commission (SOPAC) website. Population data for these maps are from the SPC, and economic indicators from the ADB.
Remoteness is also a key factor, which we have assessed here in relationship to proximity to neighbouring countries, weighted by the neighbour’s GDP. As discussed in detail in the next section, out of 219 countries in the world with available data, the Pacific Islands as a group are the most remote. According to the measure of average GDP-weighted distance to any other country, the Pacific Island countries, as a group, rank 197th out of the 219 countries in 2003. Within the Pacific, the Cook Islands are among the most remote – ranked as the 213th most remote country, whereas Palau was only on 171st (due to its proximity to high GDP Asian countries). From another perspective Palau is the most distant of the US Freely Associated States to the US, which provides the majority of its financial support and imports, but Palau also benefits from its proximity and especially tourism market from Japan and Taiwan. Thus both Asian and American geo-political linkages contribute to Palau’s ability to benefit from its border position between world regions. In contrast, the greater remoteness of the Cook Islands is bridged by its Free Association relationship with New Zealand and the close personal and familial networks between Cook Islanders in their home islands (26% of total population) and in Aotearoa (74%).

This GIS visualization of indicators of economic success may help in identifying and assessing a complex set of variables. In particular, one aim of the authors is to encourage questioning about whether it is these fundamental geo-political realities that mainly affect the economic performance of Pacific Island countries.
In addition to raising questions about the role of geo-political factors in influencing economic performance we also question the common assumption that the Pacific contains a number of growth failures. In order to fail one needs to have some standard of success. Hence what is required to assess how well the Pacific Island economies are performing and what countries like New Zealand can do to help them perform better is a valid counterfactual of what their economic performance should have been.

Such a counterfactual is necessarily complex because of the interplay of geographic and political factors along with the more readily apparent economic ones. We are hardly the first authors to understand the need for a counterfactual; Duncan (2005) also discusses this and uses Mauritius as a comparator to Fiji and Botswana as a comparator to PNG. However, as we show below, using key characteristics of what makes a “Pacific island” economy (remoteness, small population, and less political independence than in many regions) identifies very few nations that could realistically be considered comparable. This makes the assessment task of how well (or badly) the Pacific Island countries are doing even more difficult.

Another feature of our analysis that may already be apparent from the use of maps is that we pay close attention to geography as a fundamental growth constraint that Pacific Island countries have little control over. In addition to using comprehensive measures of remoteness in explaining economic growth in the Pacific relative to elsewhere, we also account for the feature that economic growth rates may depend on the growth rates of nearby countries. This spatial autocorrelation can arise because nearby countries have unobserved factors in common (e.g., climate, topography, institutions) and because of interaction between one country and another (e.g. through
common customs borders, cross-border flows of goods and labour, and shared use of key assets) so that growth depends on the growth rate of neighbouring countries. This second possibility, of dependence on neighbourhood growth rates, clearly favours regional solutions.

How Well are Pacific Economies Performing?

Previous Literature: Small States and Small Island States

The difficulty many Pacific Island economies have found in achieving sustained economic growth has been noted above. Recall, for example, that Sampson (2005) finds that after controlling for OECD membership and whether a country is an oil exporter, the Pacific states grew more slowly than countries in any other region of the world over 1995-2003. This lack of growth may appear puzzling given the high per capita inflows of external finance, in the form of both overseas aid and remittances.

Evidence on these in-flows of external finance are shown in Figure 2 for the most recent year available for each of the Melanesian and Polynesian countries and for Kiribati. Data on remittances to the other Micronesian countries are less easily available from international sources. Even for the countries with reported data, it is likely that remittances are understated due to some transfers occurring through informal means such as travellers carrying cash back with them. Moreover, the data in Figure 2 only relate to monetary remittances rather than the provision of goods in-kind, for which there are no comparable cross-country data.

Figure 2: Financial Flows in the Pacific

For the countries in Figure 2, aid is equivalent to 16.3 percent of GDP, on average. This is somewhat higher than remittances, which are 12.5 percent of GDP and much
higher than foreign direct investment, which is only 0.6 percent of GDP. Total remittances to the nine countries in Figure 2 are ca. US$350 million per year, with total aid at over US$400 million. Thus, across all Pacific Island economies (including those not in Figure 2) it is likely that the combined total external finance is almost NZ$200 per capita, which is very high by world standards.

To have such modest economic growth with this generous inflow of external finance has many experts placing the blame on poor institutions (Chand, 2001), aid inflows (Hughes, 2003), bad policy settings (Chand, 2003; Gosarevski, Hughes and Windybank, 2004) and especially governance failures (Duncan, 2005). There is less of a consensus that smallness per se is a source of disappointing growth experiences. The literature on small countries (which includes all of the Pacific except for Papua New Guinea) notes that small size means a small domestic market and dependence on export markets and a narrow range of products, limited ability to influence prices, limited ability to exploit economies of scale, limitations on domestic competition, and problems of public administration (e.g. small labour force from which to draw experienced and efficient administrators). Insularity and remoteness give rise to problems associated with transport and communications such as high per-unit transport costs, uncertainties of supply, and the need to hold relatively large stocks. Proneness to natural disasters is a problem since the impact of a given disaster covers relatively more of a small country (Briguglio, 1995).

Despite these apparent disadvantages, Easterly and Kraay (2000) find that small states have the same range of growth experiences as other states. Their results are based on a dataset of 157 countries, 33 of which are small states (defined by population below one million). They also find that there is no growth difference for small states after controlling for their region in the world, whether an oil producer, and whether an OECD member. The absence of a clear growth disadvantage of small states is due to offsetting effects of openness to international trade, which is favourable to growth, and greater output volatility, which harms average growth rates. This output volatility is partly due to the relatively larger terms of trade shocks experienced by small states.

Bertram (2004) finds that the level of GDP per capita of small island economies depends directly on the GDP per capita of their metropolitan patron and on the strength of their political ties with the metropolitan patron. For example, for a group of 20 Pacific Island states and territories (which excludes PNG and Hawaii) it appears that being politically fully integrated with a patron economy in the global core added about US$6,016 to per capita income. Put another way, Bertram and Karagedikli (2004) show that on average across the Pacific islands region, politically integrated units exhibit per capita incomes nine times higher than sovereign island states (including both Hawaii and PNG – it is three times larger if these two units are excluded). Similarly, Armstrong and Read (2000) show that dependent territories have higher GNP per capita than the sovereign states, even when controlling for a range of other factors such as economic structure, island status, and aid transfers.

Armstrong and Read (2006) note that the Pacific states are more likely to be smaller, islands, archipelagos, remote, and mountainous than other small states. However, they

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4 Only four of the 33 were from the Pacific (Fiji, Solomon Islands, Vanuatu and Samoa). Sampson (2005) shows that this conclusion is not robust to changes in sample coverage and time period.
conclude that neither small size itself, islandness, being mountainous nor being archipelagos is a serious handicap for the small Pacific states. Remoteness, however, almost certainly is. In their study they measure remoteness as the great circle distance from the capital city of each small state to the nearest one of three global economic hubs (Tokyo, Japan; Washington or Los Angeles, USA; and Brussels, EU). Since it is arguable that Auckland, Sydney and even Brisbane are important hubs for parts of the Pacific, it is clear that this measure of remoteness is only a partial one. It is therefore useful to describe just how economically remote the Pacific Island countries are, using more comprehensive measures than are available in the literature. In subsequent parts of this chapter these measures of remoteness will be included in cross-country growth models, to examine the hypothesis that geographic isolation is a fundamental growth constraint for Pacific Island economies.

How Remote Are the Pacific Islands?

The comprehensive measure of country remoteness used here is based on a matrix of bilateral distances for 219 countries with data available. Full details on the construction of these distance measures are reported in Gibson (2006c). The great-circle distance from each of the 19 Pacific Island states and territories (that have data available) to each of the other 218 countries in the rest of the world (ROW) is then weighted by either (i) the GDP of each of those 218 countries or (ii) the population of each of those 218 countries.5

Table 2: Potential Market Remoteness Measures for the Pacific and Caribbean Islands

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Micronesia</td>
<td>10377</td>
<td>176</td>
<td>146</td>
<td>179</td>
</tr>
<tr>
<td>Polynesia</td>
<td>11942</td>
<td>207</td>
<td>201</td>
<td>208</td>
</tr>
<tr>
<td>Melanesia</td>
<td>11972</td>
<td>207</td>
<td>170</td>
<td>208</td>
</tr>
<tr>
<td>Pacific Islands (mean)</td>
<td>11456</td>
<td>197</td>
<td>176</td>
<td>199</td>
</tr>
<tr>
<td>Caribbean (mean)</td>
<td>8103</td>
<td>100</td>
<td>176</td>
<td>98</td>
</tr>
</tbody>
</table>

Source: Summary averages from country-level results reported in Gibson (2006c). Distances are the weighted average distances from the countries in each island group to the countries in the rest of the world (ROW), weighted either by the ROW country's GDP or population. The rank is out of 219 countries, with #1 the most accessible, #219 most remote.

Table 2 reports the average distances for three Pacific Island groups, derived from country-level information reported by Gibson (2006c). The average Pacific Island country is 11,500 kilometres from any other randomly selected country (weighted by ROW GDP). Micronesian countries are slightly less remote than either Polynesian or Melanesian countries since more of the world’s GDP is in the Northern Hemisphere. Out of the 219 countries for whom this calculation has been made, the Melanesian and Polynesian countries have an average rank as the 207th most remote, while the Micronesian countries have an average rank of 176th most remote (shown in column 2 of Table 2). A useful comparison is with the Caribbean islands, whose average GDP-weighted distance from the rest of the world (8100 kilometres) is only 70 percent of the average for Pacific Island countries. In terms of ranking, the average Caribbean

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5 GDP-weighted great circle average distance to all other countries has also been used as a measure of remoteness by Silva and Tenreyro (2006).
island is the 100th most remote, compared with the average Pacific Island which is the 197th most remote.

The final two columns of Table 2 report the rankings for two different measures of distance – one using population weights rather than GDP and one using GDP 15 years earlier. Pacific Island countries, and especially Micronesia, are less remote from population centres than they are from the centres of the world’s GDP. The values in the final column suggest a slight decline in potential remoteness for Pacific Island countries over the 15 years from 1988 to 2003. Their average remoteness rank improved from 209th to 207th, no doubt due to the rising share of world GDP located in Asia.

Whether proximity to rich (or populous) countries equals actual accessibility depends on transport links. One metric for examining ‘economic distance’ based on transport links is to consider airfares. Map 3 shows the average airfares from each Pacific Island country to three ‘hubs’ surrounding the Pacific – Auckland, Sydney and San Francisco. According to these average cost calculations the Pacific Island countries appear more remote than island countries in other parts of the world. While the Pacific Island countries are, on average, 40 percent further from the locations of world GDP than the island states in the Caribbean they are much further away in terms of airfare-based measures of distance (Table 3).

Map 3: Average Cost of Air Travel in the Pacific
Table 3: Air Fare Measures of Remoteness for the Pacific and Caribbean Islands

<table>
<thead>
<tr>
<th>Island Group</th>
<th>Average cost of fares to three key metropolitan cities (US$)</th>
<th>Average fare to closest of three key metropolitan cities (US$)</th>
<th>Average fare to most distant of three key metropolitan cities (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micronesia</td>
<td>1773</td>
<td>1768</td>
<td>1361</td>
</tr>
<tr>
<td>Polynesia</td>
<td>1067</td>
<td>727</td>
<td>1699</td>
</tr>
<tr>
<td>Melanesia</td>
<td>905</td>
<td>585</td>
<td>1586</td>
</tr>
<tr>
<td>Pacific Islands (mean)</td>
<td>1289</td>
<td>1084</td>
<td>1534</td>
</tr>
<tr>
<td>Caribbean (mean)</td>
<td>545</td>
<td>395</td>
<td>902</td>
</tr>
</tbody>
</table>

On average, traveling from a Caribbean island to any one of three main metropolitan cities with strong links to the Caribbean (Miami, New York and London) costs US$545. A similar calculation for the Pacific Islands, but with Auckland, San Francisco and Sydney as the metropolitan cities, gives an average fare of US$1289. Thus, by this metric the Pacific Island countries are more than twice as remote as the Caribbean islands. The cost disadvantage is even more apparent when considering travel to the closest metropolitan city, which is likely to act as a deterrent to both freer movement of labour (e.g. seasonal migration schemes) and the export of services to in-bound tourists. This example serves as a warning that the potential market access and distance measures used in the rest of this paper are imperfect proxies for more economic concepts of distance. However, such imperfect proxies have to be relied upon because of limited data on better economic proxies for distance.6

A Spatio-Econometric Analysis of Economic Growth in the Pacific Islands

In this section of the chapter we use regression modeling to examine the economic growth performance of the Pacific Island economies. There are two notable features of the analysis; first, it uses the comprehensive measures of geographic remoteness reported above, to test the hypothesis that geography is a fundamental constraint on growth in the Pacific. The second feature is that the analysis recognizes that economic growth for a given country may depend on the growth of nearby countries. Surprisingly, despite the spatial nature of cross-country data on economic growth there is little mention of spatial autocorrelation in the literature. The main results are due to Conley and Ligon (2002) who reject the hypothesis of independent growth rates for countries that are less than 2000 miles from each other.7 Studies of the economic performance of small states (Easterly and Kraay, 2000; Armstrong and Read, 2002, 2006) also ignore this spatial autocorrelation, despite small states being clustered in the Caribbean and Pacific oceans, so that omitted spatial interactions may bias estimates of the effects of “smallness”. Similarly, none of the studies of slow growth in the Pacific account for possible spatial effects despite the geographic clustering (by definition) of the countries in this region.

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6 Even in the Conley and Ligon (2002) study, where ‘economic distance’ is proxied by the cost of sending a 20 kilogram package by UPS between the capital cities of country pairs, only a limited number of pairs (n=26) were obtained which were then used as ‘hubs’ for completing the matrix of shipping costs from all countries to all other countries. For measures of distance based on airfares, Conley and Ligon chose 15 hub cities.

7 In terms of their other distance metrics they find a significant positive spatial correlation between the growth rates of countries where the cost of UPS shipping measure of distance was less than US$270 and where the airfare cost measure of distance was less than US$1100.
Table 4 describes the variables used in the cross-country growth model. A sample of 174 countries has full data available, including the remoteness measures described above and average annual GDP per capita growth rates over 1987-2003. The 15 Pacific Island countries in this sample (PNG, Fiji, Solomon Islands, Vanuatu, Samoa, Tonga, Cook Islands, Tuvalu, French Polynesia, New Caledonia, FSM, Kiribati, Marshall Islands, Nauru, Palau) have, on average, grown more slowly in per capita terms than have other countries over the 1987-2003 period. This result holds even more strongly when restricting the comparison to other ‘small’ countries (defined by population below three million). Whether this gap (and its statistical significance) persists after accounting for the greater remoteness and other characteristics of Pacific Island countries can only be answered with the regression models.

The selection of explanatory variables to be used in the model is guided by the results of previous studies of economic growth in either ‘small’ or Pacific Island economies, especially Easterly and Kraay (2000), Bertram (2004) and Armstrong and Read (2006). In addition to the distance measures described above in Table 2 the other geographic variables included in the models are indicators for Pacific Island countries and for landlocked countries. The next set of variables relate to population. The literature uses several population thresholds for ‘small’ countries, ranging from 1-5 million. To provide more generality a continuous (log) population variable is used. The logarithm of land area for each country is also included to implicitly give a measure of population density. Density affects growth by allowing easier knowledge spillovers and lower per capita infrastructure costs but also may have negative effects due to congestion and competition for resources, especially on small atolls.

In the literature, greater trade openness and output volatility of small countries appear to be offsetting factors affecting growth (Easterly and Kraay, 2000). Both are included in the model. Sovereign status and a history of colonization are important geopolitical factors affecting growth since former colonies seem to converge to their colonial power (Bertram, 2004). Another factor that may hinder growth, at least in Melanesia, is language diversity. This diversity may increase the transactions costs of internal commerce, and raise the costs and lowers the returns to human capital formation. Language diversity is also a proxy for ethnic fractionalization which may lead to more group conflict (Alesina et al., 2003). Finally, initial income levels are likely to affect growth, although the direction is widely debated. Convergence, whereby countries with higher initial income have lower subsequent growth, appears to be limited to subsets of countries, while across the world as a whole the dominant feature is divergence (Pritchett, 1997).

The average characteristics of the three groups of countries in Table 4 suggest that the Pacific Island countries face a number of potential disadvantages in addition to being very remote. Their population and land area are much smaller than for other states, even just comparing with states whose population is less than three million. Hence limited domestic markets may reduce their income (Redding and Venables, 2004). They are also less open to international trade, due either to protectionist policy choices or to their greater remoteness causing transport costs to be a larger source of ‘natural protection’. The Pacific countries also have greater language diversity. While less likely to have been colonized than other small countries their last colonial power grows more slowly than the colonial power for other small countries, which matters if incomes converge to those of the colonial power.
Table 4: Description of Data Used in Regressions

<table>
<thead>
<tr>
<th></th>
<th>Pacific Islands</th>
<th>Other Countries</th>
<th>Non-Pacific Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual growth rate of GDP per</td>
<td>0.020</td>
<td>0.022</td>
<td>0.027</td>
</tr>
<tr>
<td>capita (US$), 1987-2003</td>
<td>(0.023)</td>
<td>(0.034)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>GDP-weighted average distance to all</td>
<td>11.632</td>
<td>8.234</td>
<td>8.429</td>
</tr>
<tr>
<td>other countries in 1987-89 (000</td>
<td>(0.793)</td>
<td>(1.764)</td>
<td>(1.592)</td>
</tr>
<tr>
<td>kilometres)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in GDP-weighted average distance</td>
<td>-141.767</td>
<td>67.054</td>
<td>83.302</td>
</tr>
<tr>
<td>to all other countries between 1988-2003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(kilometres)</td>
<td>(8.519)</td>
<td>(87.999)</td>
<td>(61.793)</td>
</tr>
<tr>
<td>(logarithm of ‘000s)</td>
<td>(1.688)</td>
<td>(1.920)</td>
<td>(1.240)</td>
</tr>
<tr>
<td>Land area (logarithm of square</td>
<td>7.455</td>
<td>11.697</td>
<td>9.041</td>
</tr>
<tr>
<td>kilometres)</td>
<td>(2.755)</td>
<td>(2.507)</td>
<td>(2.710)</td>
</tr>
<tr>
<td>Landlocked country (=1, otherwise = 0)</td>
<td>0.000</td>
<td>0.201</td>
<td>0.150</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.402)</td>
<td>(0.362)</td>
</tr>
<tr>
<td>Openness to trade, exports plus imports as a share of GDP 1987-2003</td>
<td>0.715</td>
<td>0.945</td>
<td>1.442</td>
</tr>
<tr>
<td></td>
<td>(0.181)</td>
<td>(0.695)</td>
<td>(0.990)</td>
</tr>
<tr>
<td>Volatility, standard deviation of annual GDP growth, 1988-2003</td>
<td>0.114</td>
<td>0.149</td>
<td>0.111</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.121)</td>
<td>(0.115)</td>
</tr>
<tr>
<td>Language diversity, number of languages spoken by at least 20% of the population</td>
<td>1.867</td>
<td>1.629</td>
<td>1.775</td>
</tr>
<tr>
<td></td>
<td>(0.743)</td>
<td>(0.784)</td>
<td>(0.698)</td>
</tr>
<tr>
<td>Never a colony (=1, otherwise = 0)</td>
<td>0.067</td>
<td>0.170</td>
<td>0.025</td>
</tr>
<tr>
<td></td>
<td>(0.258)</td>
<td>(0.377)</td>
<td>(0.158)</td>
</tr>
<tr>
<td>GDP per capita growth rate (1987-2003)</td>
<td>0.031</td>
<td>0.034</td>
<td>0.042</td>
</tr>
<tr>
<td>of last colonizing country</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Initial income, (log) GDP per capita (US$) in 1988</td>
<td>7.385</td>
<td>7.309</td>
<td>7.653</td>
</tr>
<tr>
<td></td>
<td>(1.104)</td>
<td>(1.451)</td>
<td>(1.232)</td>
</tr>
<tr>
<td>Number of countries</td>
<td>15</td>
<td>159</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: World Bank and Asian Development Bank for data on GDP, growth rates, population, openness and volatility. Data on land area, whether landlocked, language diversity and colonizers are from a database constructed by the Centre d'Etudes Prospectives et d'Informations Internationales.

On the other hand, some factors may favour faster growth in the Pacific than elsewhere. First, between 1988 and 2003 the Pacific became ‘closer’ to the world economy due to the rising share of world GDP produced in surrounding countries. In contrast, other small countries became further away from the centres of world GDP. Second, none of the Pacific Island countries are landlocked, which is typically found to be an impediment to growth (Hausmann, 2001). Third, the volatility of their growth rates, which has been shown to reduce average growth (Easterly and Kraay, 2000), is no different than for other small states. Finally, their initial income (as proxied by log GDP per capita in 1988) is lower than for other small countries, which may favour faster growth if convergence is occurring.
Basic Regression Results

The results of estimating the cross-country growth model with Ordinary Least Squares (OLS) are reported in Table 5. This estimator does not take account of any spatial autocorrelation, whose impact is considered subsequently in Table 6. The results in Table 5 are presented in five columns, where the first four each deal with a set of factors likely to affect growth rates and finally all factors are considered at once. An indicator variable for the Pacific Island countries is included in each model, to give average growth rates in the region (relative to the mean) conditional on each set of factors.

While remoteness might be expected to excuse lower growth, once geographic constraints are controlled for the Pacific Island countries still appear to grow more slowly (column 1, Table 5). The negative effect of remoteness (-0.18) seems to be outweighed by the effect of the fall in GDP-weighted distance between 1988 and 2003 (-0.42). In addition, none of the Pacific Island countries are landlocked, which gives a further reason for expecting faster growth. Since the Pacific Island countries, on average, did not grow as fast as the geographic factors predict, the indicator variable for the Pacific registers a negative, significant coefficient.

These results suggest a ‘potential growth failure’ of the Pacific Island countries not fully exploiting the opportunity provided by being close to where the greatest growth occurred in the global economy. Note though that the distance measures are based on potential market access. Suitable transport and trade systems need to be in place to turn this into actual market access; being near rapidly growing countries may be of little use if there is no cheap, easy, or reliable way to get to them. The average airfares in Table 3 show that actual remoteness of the Pacific Islands exceeds what potential remoteness measures indicate. Likewise, actual remoteness may not have fallen by the extent that potential remoteness calculations suggest.

When account is taken of each of the other groups of factors in Table 4 (population and land area; trade and volatility; and initial economic, political, and social conditions) there is no significant Pacific Island effect. In other words, one cannot reject the hypothesis that the Pacific Island countries grew at the rate that would be expected once account is taken of their smaller size (both population and area), level of trade openness and growth volatility, language diversity, initial income and the growth rate of their colonizers. However, such inferences rely on ignoring the effects of remoteness and other geographic factors (which are re-introduced in column 5). In terms of the individual coefficients in columns 2-4, the largest effects on average growth rates for this sample of 174 countries appear to be population (larger is better), land area (smaller, meaning greater density, is better), growth volatility (more is bad for average growth rates), language diversity (more is bad for average growth) and the growth rate of the last colonizing country (faster is better).
Table 5: OLS Regression Estimates of Long Run Growth Equations

<table>
<thead>
<tr>
<th>Explanatory Factors</th>
<th>Geographic Constraints</th>
<th>Population Density</th>
<th>Trade and Volatility</th>
<th>Initial Conditions</th>
<th>All Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Island country (=1, otherwise=0)</td>
<td>-0.182 (2.80)**</td>
<td>-0.058 (0.91)</td>
<td>-0.039 (0.75)</td>
<td>0.018 (0.29)</td>
<td>-0.148 (1.70)+</td>
</tr>
<tr>
<td>GDP-weighted distance (1987-89)</td>
<td>-0.187 (2.46)*</td>
<td>-0.109 (1.28)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in GDP-weighted distance (2003 vs 1988)</td>
<td>-0.403 (5.48)**</td>
<td>-0.318 (4.04)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landlocked country</td>
<td>-0.138 (1.75)+</td>
<td>-0.063 (0.81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>0.484 (3.70)**</td>
<td>0.254 (1.80)+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land area</td>
<td>-0.676 (5.89)**</td>
<td>-0.274 (1.88)+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness to trade</td>
<td>0.169 (2.88)**</td>
<td>0.100 (1.56)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volatility of per capita GDP growth rate</td>
<td>-0.406 (5.32)**</td>
<td>-0.339 (4.93)**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language diversity</td>
<td>0.023 (0.27)</td>
<td>0.067 (0.91)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never a colony</td>
<td>0.227 (2.33)*</td>
<td>0.108 (1.34)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colonizer growth rate</td>
<td>0.233 (3.33)**</td>
<td>0.108 (1.49)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial income level [(log) GDP per capita in 1988]</td>
<td>0.000 (0.00)</td>
<td>0.000 (0.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.000 (0.00)</td>
<td>0.000 (0.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.149 (0.136)</td>
<td>0.135 (0.215)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-232.411 (234.649)</td>
<td>-225.304 (225.304)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Standardized (beta) coefficients are reported, showing the effect of a one standard deviation increase in the explanatory variable on the standard deviation of average per capita GDP growth over 1987-2003, for N=174 countries. Definitions for all variables are reported in Table 4.

Heteroscedasticity robust t-statistics in ( ). + significant at 10%; *at 5%; **at 1%

When geographic factors are combined with all of the other factors in the regression model, the average growth rates of the Pacific Islands are significantly lower than for other countries. While the effect is statistically significant at only the 10 percent level, it is nevertheless suggestive of a growth failure since so many of the constraints that bind in the Pacific have been accounted for. However this conclusion depends on the appropriateness of the statistical model used in Table 5. While the ‘industry standard’ Ordinary Least Squares method is used, there are good reasons to believe that this method is inadequate for studying patterns of economic growth across countries.
In particular, there is substantial spatial autocorrelation in economic growth rates. This is shown in the form of a cluster map which highlights countries where there is a statistically significant relationship between the growth rate of that country and its neighbours (Figure 3). A variety of statistical tests reported in the working paper version of this section (Gibson, 2006c) indicate that an appropriate neighbourhood for looking for these correlations is for countries that are within 35 degrees of latitude or longitude of one and other (a distance of approximately 3900 kilometres at the equator).

According to Figure 3, most of Africa has statistically significant (with a confidence level of 95 percent) low-low clusters of economic growth. In contrast, Europe, the United States and parts of Latin America, and much of Southeast Asia have significant high-high clusters. There are very few high-low and low-high combinations. These patterns are indicative of significant positive spatial autocorrelation in average GDP growth rates whereby growth rates are similar to the growth rates of neighbouring countries.

Figure 3: Cluster Map for Local Spatial Autocorrelation in Country Average Economic Growth Rates, 1987-2003

Source: Author’s calculation using GeoDa software of Anselin Syabri and Kho (2006), based on a weight matrix with countries within 35 degrees of each other as ‘neighbours’.

Another way to observe this spatial autocorrelation is with a particular type of scatter plot, known as a Moran scatter plot. This shows the relationship between the spatially weighted average growth rate of neighbours, \( W_g \) and the growth rate of each country, \( g \). So the high-high clusters correspond to countries in the positive-positive (‘northeast’) quadrant of a Moran scatterplot, which has \( W_g \) on the y-axis and \( g \) on the x-axis. The low-low clusters correspond to the negative-negative quadrant. The Moran scatter plot in Figure 3 indicates positive spatial autocorrelation, since there is
a positive relationship (slope=0.298) between the spatially weighted average growth rate of neighbours, \( W_{\text{GROWTHRATE}} \) and the \( \text{GROWTHRATE} \) of each country.

If this clustering of growth rates is transmitted into the residuals of a growth equation it violates the assumption of randomness of residuals that estimation methods like OLS require. In fact, a variety of diagnostic tests reported by Gibson (2006c) suggest that the regression results in Table 5 are suspect because there is an absence of spatial randomness in the growth residuals. These tests also suggest that the appropriate model instead is a so-called spatial lag model, where the growth rate of each country is affected by the spatially weighted average of growth rates of other nearby countries, even after controlling for observable factors that might be common for the countries, such as measures of remoteness or dummy variables for belonging to a particular region of the world. In other words, OLS estimates of the growth model that are used in Table 5 and in all previous statistical studies of economic growth in the Pacific (and in small countries) are likely to be biased because they omit a relevant variable – the spatially weighted average growth rate of nearby countries.

To see whether this bias matters the model in the last column of Table 4 was re-estimated as a spatial lag model. The preferred estimates use the spatially weighted average growth rate of countries within a 35 degree neighbourhood, with the countries that are closer within that neighbourhood receiving a large weight in the formation of the weighted average (the weights decline with distance). This neighbourhood of approximately 3900 kilometres is similar to the finding of Conley and Ligon that the spatial autocorrelation between country’s growth rates is highest at around 2000 miles (3200 kilometres). But as a sensitivity analysis more extreme neighbourhoods of 25 degrees and 75 degrees are also used, along with a variant where all countries within the 35 degree neighbourhood are given equal weights.

According to the preferred estimates in Table 6, each one point increase in the spatially weighted average growth rate of countries within a radius of 35 degrees raises the GDP growth rate of the country at location \( i \) by 0.54 points. This dependence on the growth rate of neighbouring countries is even after controlling for remoteness, other geographic constraints, population, openness and volatility and initial economic, social, and political factors.

The use of the spatial lag model has a dramatic effect on the coefficient on the Pacific Islands dummy variable, which is the focus of attention. This coefficient now is only one-half as large as in the OLS estimates and is statistically insignificant. The same fall in magnitude and statistical significance of the dummy variable for Pacific Island countries occurs when the spatial lag model is estimated with the other weights matrices and neighbourhoods.

In contrast to the fragility of the result for the Pacific Islands dummy variable, several of the other growth determinants have the same effect in the spatial lag model as they had in the OLS estimates. These more robust variables include land area, openness to trade and the volatility of the growth rate. The positive effect of population becomes even more apparent in the spatial lag results than it was with OLS. Some of the other variables, including language diversity and the change in GDP-weighted distance between 1988 and 2003 become smaller but are still statistically significant. This may reflect the fact that these variables are also somewhat spatially clustered. Thus it
appears that geographic variables, including regional dummies, are susceptible to biased coefficients from a failure to include relevant spatial lags in cross-country growth models.

Table 6: OLS and Spatial Lag Regression Estimates of Long Run Growth Equations

<table>
<thead>
<tr>
<th></th>
<th>OLS regression</th>
<th>Inverse-distance weights, neighbourhood:</th>
<th>Equal weight 35 degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25 degrees</td>
<td>35 degrees</td>
<td>75 degrees</td>
</tr>
<tr>
<td>Pacific Island country (=1, otherwise=0)</td>
<td>-0.148</td>
<td>-0.070</td>
<td>-0.066</td>
</tr>
<tr>
<td>GDP-weighted distance (1987-89)</td>
<td>-0.109</td>
<td>-0.042</td>
<td>-0.039</td>
</tr>
<tr>
<td>Change in GDP-weighted distance (2003 vs 1988)</td>
<td>-0.318</td>
<td>-0.154</td>
<td>-0.133</td>
</tr>
<tr>
<td>Landlocked country</td>
<td>-0.063</td>
<td>-0.048</td>
<td>-0.049</td>
</tr>
<tr>
<td>Population</td>
<td>0.254</td>
<td>0.276</td>
<td>0.262</td>
</tr>
<tr>
<td>Land area</td>
<td>-0.274</td>
<td>-0.257</td>
<td>-0.252</td>
</tr>
<tr>
<td>Openness to trade</td>
<td>0.100</td>
<td>0.116</td>
<td>0.114</td>
</tr>
<tr>
<td>Volatility of per capita GDP growth rate</td>
<td>-0.339</td>
<td>-0.337</td>
<td>-0.324</td>
</tr>
<tr>
<td>Language diversity</td>
<td>-0.161</td>
<td>-0.111</td>
<td>-0.107</td>
</tr>
<tr>
<td>Never a colony</td>
<td>-0.067</td>
<td>-0.079</td>
<td>-0.071</td>
</tr>
<tr>
<td>Colonizer growth rate</td>
<td>0.108</td>
<td>0.065</td>
<td>0.071</td>
</tr>
<tr>
<td>Initial income level [(log) GDP per capita in 1988]</td>
<td>0.108</td>
<td>0.005</td>
<td>-0.008</td>
</tr>
<tr>
<td>Spatial weighted average of neighbors’ growth rates</td>
<td>n.a.</td>
<td>0.439</td>
<td>0.542</td>
</tr>
<tr>
<td>Constant</td>
<td>0.000</td>
<td>-0.015</td>
<td>-0.006</td>
</tr>
<tr>
<td>R-squareda</td>
<td>0.394</td>
<td>0.475</td>
<td>0.492</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-201.811</td>
<td>-192.706</td>
<td>-190.404</td>
</tr>
</tbody>
</table>

Note: Standardized (beta) coefficients are reported, showing the effect of a one standard deviation increase in the explanatory variable on the standard deviation of average per capita GDP growth over 1987-2003, for N=174 countries. Definitions for all variables are reported in Table 3. Preferred estimates are reported in bold. Robust t-statistics in ( ) for OLS and robust z-statistics for the spatial lag. + significant at 10%; * at 5%; ** at 1%.

For spatial lag models the squared correlation between actual and predicted values is reported.
Spatio-Economic Effects: A Summary

We have reported tests of the hypothesis that geographic factors, and particularly remoteness, can account for the slow rate of economic growth by the Pacific Island countries. More comprehensive measures of remoteness are used than in previous studies and the estimation method allows for spatial autocorrelation, due to interactions between the growth rates of nearby countries.

The results show that the Pacific Island countries are some of the most economically remote in the world. However, they have become potentially less remote in recent years as world economic activity has shifted towards the Pacific. In a cross-country growth equation the reduction in remoteness emerges as the more important factor. Surprisingly, therefore, the addition of geographical factors to a standard growth model makes the growth performance in the Pacific appear even slower than expected.

However, standard cross-country growth models that use Ordinary Least Squares estimation are shown to be biased since they do not account for the highly significant spatial lag, reflecting dependence on neighbouring country growth rates. Once this lag is accounted for the hypothesis that per capita GDP growth in the Pacific Island countries is no lower than in other countries is not rejected.

The fact that the spatial effects occur in the form of spatially lagged growth rates rather than as correlated errors also implies the need for a regional focus in any solutions to growth problems. In the preferred spatial regression model the average growth rate of neighbouring countries directly enters into the equation predicting the growth of a specific country. In some parts of the world, this spatial lag may reflect cross-border flows of goods and factors of production but in the Pacific intra-regional trade is not especially important. Instead, shared use by Pacific Island countries of key assets such as transport infrastructure could create a dependence on the growth of neighbours, since this growth affects the viability of transport links for all the countries sharing the service.\(^8\) Possible contagion of civil unrest across borders may also be important in the Pacific. Regardless of the exact source of spatial dependence in growth rates, it appears that it is hard for a single country to have a strong growth performance if it is surrounded by other countries that are growth failures.

Determining Relevant Comparisons to Pacific Island Nations

The results in Table 6 suggest that claims of growth failure in the Pacific Island countries are not robust. Specifically, once interactions between the growth rates of nearby countries are accounted for, there is only a small (less than 0.1 of a standard deviation) and statistically insignificant effect of being a Pacific Island country on the average growth rate of GDP per capita.

In this section, the issue of appropriate comparators for evaluating the counterfactual growth rate of the Pacific Island countries is studied. A drawback of regression methods such as those used in Table 5 and 6 is that implicitly they force all countries in a sample to be comparators for a specific country, regardless of their dissimilarity. Other \textit{ad hoc} methods of selecting of comparators, such as done by Duncan (2005) in

\(^8\) A discussion of shared use of air and sea transport in the Pacific is provided by Vitasagavulu (2005).
using Botswana and Mauritius as comparators for PNG and Fiji, also may not yield the same counterfactual growth comparisons as more comprehensive methods.

The approach used here is based on a method increasingly used in labour and public economics called propensity score matching. The basic idea is to use a probabilistic (probit) model showing the characteristics most closely associated with the propensity to be a Pacific Island country. For example, the following model explains over 80 percent of the variation in the indicator variable showing which of the sample of 174 countries are Pacific Island countries (PIC):

\[
PIC = -5.87 + 1.00GDP\_DISTANCE - 0.77\text{LOGPOP} - 1.03\text{INDEPENDENT}
\]

\begin{align*}
(2.10) & \quad (3.30) \\
(3.10) & \quad (1.03)
\end{align*}

where z-statistics are in ( ). The explanatory variables are the GDP-weighted average distance to all other countries in 2003, the logarithm of each country’s population and a dummy variable for whether the country is politically an independent state. The coefficients show that Pacific Island countries are more remote, have smaller populations and are less likely to be politically independent than are other countries. Based on these characteristics, the propensity for each country (in the sample of 174) to be a Pacific Island country is estimated, with the results shown in Figure 4.

Figure 4: Distribution of Propensity Scores: Being a Pacific Island Country

The left-hand panel of Figure 4 shows that most countries outside of the Pacific Islands have very small propensity to be a Pacific Island country. What does this seemingly self-evident statement mean? Intuitively it says that in terms of remoteness, population size and political independence there are very few countries outside of the Pacific that are like the Pacific Island countries. Who amongst the non-Pacific countries are the good comparators? The only propensity scores from the non- Pacific
Island countries that exceed 0.25 are for New Zealand (0.69), Timor Leste (0.54) and the Seychelles (0.53). In other words these are the countries that are most like the Pacific Islands in terms of remoteness, population and political autonomy. So researchers searching for counterfactuals of how the Pacific Island countries might have grown if they had adopted different policies would do better to look at the growth experience of these three comparators than at some other countries chosen in an ad hoc manner.

Of the two comparators used by Duncan (2005) Mauritius has the fourth highest propensity score (0.23) amongst the non-Pacific Island countries, while Botswana has only the 11th highest score (0.07). Thus they can be considered reasonable but not necessarily the best choices of comparators. Does the use of ad hoc methods of selecting comparators matter? The average growth rate of Mauritius and Botswana was 4.0 percent per year (4.6 percent if weighted by the propensity score). In contrast, if all 11 non-Pacific Island countries that have propensity scores at least as high as Botswana are used, the average growth rates are only 2.9 percent (or 3.0 percent weighting by the propensity score). Just restricting attention to the top three comparators of New Zealand, Timor Leste and the Seychelles, the average growth rate amongst this gang of three is also 3.0 percent. So a more systematic method of selecting comparators would lead to a lower counterfactual growth rate for evaluating how badly the Pacific Island countries have done compared with choosing Mauritius and Botswana.

The other feature apparent from Figure 4 is the considerable heterogeneity amongst the Pacific Island countries. The histogram for the propensity scores in the right hand panel shows that most Pacific Island countries have a very high propensity (of about 100 percent) of being a Pacific Island country. However, one country (PNG) has a very low probability. This reflects the difficulty of grouping PNG with the rest of the Pacific Islands, at least in terms of population size. This heterogeneity within the treatment group provides further reason for expecting differences between the treatment and control groups (the comparator countries) to not necessarily be statistically significant.

An attempt to examine such differences formally is presented in Table 7. Two types of comparisons are made. The first compares the average growth rate of the 15 Pacific Island countries (the ‘treatment group’) and 14 other countries that have what is called a ‘common support’. This condition limits the comparisons to countries where there are overlapping propensity scores in the treatment and control groups. The second comparison uses all of the 159 non-Pacific Island countries. Each treated country is matched with a weighted average of all control group countries within a certain propensity score distance, with weights declining in that distance. In other words, the counterfactual average growth rate of the control group of countries places most weight on the non-Pacific Island countries with the highest propensity scores.
Table 7: Treatment Effects: Average GDP Growth Rate

<table>
<thead>
<tr>
<th></th>
<th>Restricting to Common Support</th>
<th>Using All Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of countries in treatment group</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Number of countries in control group</td>
<td>14</td>
<td>159</td>
</tr>
<tr>
<td>Difference in mean average growth rate (Treatment minus control)</td>
<td>-0.004</td>
<td>-0.004</td>
</tr>
<tr>
<td>Standard error of difference</td>
<td>0.009</td>
<td>0.009</td>
</tr>
<tr>
<td>t-statistics</td>
<td>0.41</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Source: Author’s calculations from data described in text. Standard errors are based on 100 bootstrapped replications.

Both types of treatment effects reported in Table 6 are small (-0.004) and statistically insignificant. In other words, using this flexible propensity score method, there is no firm evidence that the Pacific Island countries grew more slowly over 1987-2003 than did an appropriate group of comparator countries.
Regional GIS Mapping Comparisons

After this consideration of spatio-economic interactions, we move to the GIS visualizations of key variables: in the first case population densities by growth rates further subdivided by urban/rural residence.


As shown above by the regression results, and also demonstrated here using GIS, population density is an important factor affecting access to resources and their sustainable management. In general the large islands have the lowest density and historically small coral atolls have often been densely populated. At present overseas migration for employment, education, and residence is a highly sought right that for some Pacific nations is either a part of their relationships with former or current colonizers, or negotiated through bilateral agreements. Nauru, a very small island historically densely populated with foreign workers as well, has the highest population density. The next four most highly densely populated island nations are Tuvalu, the Marshall Islands, American Samoa and Guam.

The urban/rural distribution gives further indications: Guam and American Samoa are predominantly urban, and in the case of Guam also includes a large and variable immigrant worker population as well as long established stateside American residents and military. Tuvalu and the Marshall islands, with larger rural populations, demonstrates in the first case a nation lacking access to overseas migration, except for small annual quotas now negotiated with New Zealand. The Marshall Islands density is an issue to monitor as its compact-related migration to Honolulu and mainland US

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9 The population estimates are for 2004 for all countries and are based on their most recent census. For Nauru the actual count in the 2002 census was 10,065 and the SPC estimate for 2004 was 10,100.
destinations is now increasing rapidly after a slow start. This map thus demonstrates a critical issue: to what extent do Pacific nations have access to working and living overseas.

MAP 5: Population Density by GNI pc

Map 5 indicates that generally low population density is correlated with low per capita Gross National Income. An important exception is Palau, which enjoys one of the highest per capita GNI, even with a low density of population. Possible reasons for the higher income level in Palau were discussed above, with the exception to the general pattern possibly because Palau also benefits from its proximity to Asia and especially the tourism market from Japan and Taiwan.
A key focus of donor strategies is to reduce poverty. In this regard, Map 6 demonstrates some of the political issues of data and comparable definitions. Recall that in Map 1, Palau and the Cook Islands are the highest ranking Pacific nations in terms of GDP per capita. Yet at the same time, Palau is shown as having one of the highest rates of population below the poverty line. This potential anomaly is circled on the map to highlight attention to it. Does this contrast between high average income levels and high reported poverty indicate extreme inequalities within this small nation? Not really, and instead the contrast highlights problems with the data available for many of these cross-country comparisons. In this case, the Asian Development Bank (ADB) data set on poverty uses estimates for Palau based upon US poverty thresholds. These refer to a far higher standard of living than the poverty lines used for other countries in the Pacific and so undermine the comparability of this key indicator.
Another key variable within the Pacific is the degree of urbanization (Map 7). The lowest urbanization rates are generally in Melanesia with the highest rates in Micronesia, although there are exceptions to this pattern. The population growth rates that overlay the maps of urbanization rates also demonstrate the on-going movement of especially Eastern Polynesians overseas. The countries with either declining or static total populations are also amongst the most urbanized.
Interestingly, emigration options do not follow pathways only to the former colonizer (Map 8). As expected, outmigration from Palau, the Federated States of Micronesia and the Marshall Islands is nearly exclusively to the United States. However over half of the out-migrants from Kiribati also migrate to America. It is also striking that a high percentage of the small numbers of Solomon Islanders who emigrate go to Europe, nearly equal to that percentage for Vanuatu.
Average education levels are the most important correlate of economic growth across countries according to recent research (Lleras-Money 2005). We therefore attempted to provide a GIS map of educational level, both by island nation-state and islanders residing abroad. However identifying “immigrants” is complicated in the case of dependent [and freely associated] states such as the Cook Islands who have unrestricted rights to live in their associated nation (Docquier and Malfouk 2006: 160). Recent data sets on international skilled migration (Docquier and Malfouk 2004, 2006) have attempted to include the Pacific in international comparative statistics of educational attainment, especially in the context of migration and brain drain. However these used only the data for the largest of Pacific island nations (Papua New Guinea and Fiji) and apply derived ratios from these two countries to all the rest of the Pacific. So while it appears that there are data, these are based upon assumptions that are unlikely to hold, and comparisons within the Pacific are impossible.

Instead, data on adult literacy rates are used, which show the lowest literacy rates in the countries with the lowest per capita income levels (although Kiribati is an exception to the trend). Generally with the exception of PNG, the Solomon Islands and Vanuatu the gender gap in literacy levels appears to be small.
The other feature of both education and literacy levels, and population mobility, is concerns about potential ‘brain drain’ of talent people from Pacific Island countries. In this regard, there is clear evidence that emigration is most skill intensive (in terms of being dominated by tertiary educated people) from the countries with the most limited emigration options (Map 10). Thus, over one-half of emigrants from Papua New Guinea are tertiary educated (and almost one-half for the Solomon Islands and Vanuatu) and these three countries have the lowest overall emigration rates. In contrast, the countries with the highest emigration rates (Samoa and Tonga) have less than one-quarter of their emigrants as tertiary educated. Thus, paradoxically, restrictions on mobility, which bind most heavily on Melanesia (except for Fiji) might also contribute to the largest losses through ‘brain drain’.

Another interesting contrast is with GNI (not shown on this map). Higher average income levels (and perhaps cultural preferences, such as differences within Yap State) may affect the ability of a country to retain its tertiary educated population. For example, although Palau has a higher emigration rate than the Federated States of Micronesia and Kiribati, the percentage of FSM or I-Kiribati outmigrants with tertiary education is nearly double that of Palau. With more jobs available in Palau and likely higher pay resulting from the higher GNI, Palau has been able to attract some of its educated former out-migrants to return.
Part 2: Pacific Systems of Generating Wealth

In Part 2 we first provide an overview of Pacific food production and its links to cash and other types of wealth. The next section reviews some of the recent studies documenting data problems concerning food systems, and a discussion of the OECD System of National Accounts (SNA-93). Then we turn to detailed economic considerations of portions of these transfers through case study assessments of remittances and other informal inter-household transfers and the degree to which they do provide safety nets for Pacific peoples.

Introduction

There are two critical ways in which Pacific systems of generating wealth differ from those of the West. Food production is a foundation upon which Pacific wealth systems are built, whereas European stores of value (e.g., gold that in the past were the standard upon which money were based) are separately produced and based on other types of commodities. As family food productive activities are of little import in European systems today, they are to a large extent ignored or dismissed as part of the “informal economy.” In contrast, the production of food remains the primary support for many Pacific peoples today and also is the sector through which excess production can be transformed both into Pacific wealth items (hard wealth and soft textile valuables) and into cash through market sales. Undercounting this highly productive sector of Pacific economies leads to a miscalculation both of its productive power and of its ability to inter-relate with monetary economies of the islands and New Zealand and Australia that host major populations of Pacific Islanders.

The second related difference between European and Pacific wealth systems is that to a large extent production of food stuffs (taro, breadfruit and fish) and of wealth items (fine mats, tapa, adze blades and bead monies), and their distribution systems are gendered. Generally women grow root crops, and men the tree crops. Throughout the Pacific production and exchanges are organised through relationships between sisters and brothers, and their respective spouses. Under the early colonial rule of Pacific islands, only the men were subjected to head taxes, and men taken as overseas labourers. Europeans observed Pacific women producing mats and tapa but did not recognize their economic value. This lack of attention at times permitted women greater flexibility. Much of women’s production is still included in the under-counted and under-analysed household sector. Only in the last decade have UN and other major international aid projects (ADB, World Bank) seriously recognized the economic (and related political) power of Pacific women and supported women-oriented projects through Women in Development and other international projects.

In Western economic terminology, Pacific islanders today utilize food production for subsistence (e.g. most small shellfish), current account funds (e.g. fish from the lagoon sold for routine cash requirements), and capital accounts (e.g. copra or pelagic fish sold for seasonal or major expenditures such as school fees, major medical costs, or house or boat production or buying large vehicles). Some items may be used in only one arena, but most starch (yam, taro, breadfruit) and protein (fish, pork) foods may be allocated across each arena to suit current needs. Today as Pacific families are spread throughout island nation-states and abroad, they tap regional wage labour and market sales and transfer both indigenous valuables and money, and foodstuffs among islands and overseas sites.
The studies of these transactions and their meanings are predominantly found in the anthropological literature and are ill connected with economic micro- and macro-analyses, yet Pacific wealth systems remain an important mechanism to mediate relationships between indigenous and introduced money and products. Weiner (1980) and Akin and Robbins’ (1999) edited volume *Money and Modernity: state and local currencies in Melanesia* demonstrate the complex processes through which particular Melanesian societies today attempt to regulate intersections between islander and international moneys. A brief overview of the ways these systems operate in the region is provided.

Review of relevant anthropological and geographical literature

Analogous to New Zealanders’ perceptions of the Pacific region, many members of the public still hold to strong stereotypes about primitive stone-age technologies of New Guinea. There is little knowledge of Pacific agriculture, although awareness of Pacific voyaging and navigational skills (Howe 2006) is growing. Few know of the contributions of farmers of highland New Guinea in developing tuber-based agriculture during early Holocene period of agricultural origins (Bellwood 1996, and see Dewar 2003 for current debates); that one of the world’s major foods, sugar, was first domesticated on New Guinea is barely mentioned even in standard references (Mintz 1986). Peoples settled New Guinea at least 30,000 years before present (BP) and over time were the first to domesticate a number of important species of taro and probably breadfruit. Joined by later settlers from what is now Taiwan and island Indonesia, subsequent groups eventually settled the entire region, successfully adapted to major environmental transformations (i.e. the sea-level changes of the Pleistocene, El Niño rainfall variability), adapting both the plant biota and their agricultural techniques and seeking new plants suitable to the new atolls and high island environments they encountered. The South American sweet potato (*Ipomoea batatas*) is found in archaeological sites dating to 1000-1100 A.D. in the Cook Islands (Kirch 2002), Easter Island (1526 A.D.) and Aotearoa (Ladefoged et al 2005). This new staple transformed New Guinea societies, supporting dense populations and regional exchange systems (Ballard et al 2005). Major changes throughout Micronesia from 1000-1500 A.D. are associated with evidence of heavy new reliance on breadfruit especially in the eastern islands. Botanists studying the salt-resistant hybridized Micronesian breadfruit hybrid (*Artocarpus mariannensis – Artocarpus altilis*) noted that the cross combined the seeded salt-resistant *A. mariannensis* found wild on the continental western Micronesian islands of Palau and the Marianas, with the salt intolerant *A. altilis* domesticated from the wild species *A. camansi* originally brought by settlers into Eastern Micronesia. Voyagers, most likely from the Eastern atolls, sought, valued and adapted new crops to suit their atoll environments, which were distributed back to the west and as far as the Polynesian atolls of Tuvalu and Tokelau. Petersen links to the hybridisation of *A. mariannensis-A. altilis* to the matri-clans that now link the Micronesian region. The new hybrid permitted a breadfruit revolution in the islands, and major demographic, political and social transformations throughout (full details in Petersen 2006).

A negative stereotype of stone-age subsistence farmer thus does not fit the image that emerges from recent research documenting the contributions of Pacific agriculturalists who domesticated new species and successfully adapted to a series of catastrophic
events over the millennia. This is partly due to the radical differences between Pacific crops and better known world crops such as rice and grains that are regularly harvested and stored. Pacific agriculture focuses upon agroforestry (Clark and Thaman 1993), and root crops such as taro and sweet potato (now the fifth most important crop in the developing world). In parts of the Pacific root and tree crops require little labour and may be planted and harvested throughout the year as needed. Islander multi-cropping systems of planting, management and harvesting differ from Western single-cropping chemical fertilization systems. Soft taro (*Colocasia esculenta*) may be planted and harvested at different times for specific occasions, or in contrast the hard taro (*Cyrtosperma*) may be left in the land for thirty or more years until needed.

Local and regional commodity and wealth exchange systems were long established in the Pacific (i.e. Papua, Vitiaz Straits, Massim, New Britain, Caroline Islands, and Samoa/Tonga/Fiji) to distribute scarce commodities (obsidian, pottery, shell and stone tools, dyes) and foods. At the simplest level of analysis, indigenous economies were and are based on the competitive production of local foods and ritualized consumables (betel, kava) upon which a system of valuables and currencies were based. Throughout the region cloth valuables (mats, tapa, fine banana fibre weavings and bundles, and fibre clothing) were nearly exclusively made by women. Hard valuables in contrast were generally made by and associated with males – fossilized clam shell fashioned into adzes and ornaments, greenstone, obsidian tools, and shell, stone and glasseous bead valuables. The valuables and currencies stored value created through food production.

As Pacific peoples continue to settle distant shores and encounter new foods, valuables and currencies, they incorporate these into exchange systems that they adapt to new conditions. They include the more portable new currencies to capture their very evident powers, but also in attempt to contain their dangers and globalizing processes. In the discussions below we will consider some of the positive and negative Pacific experiences in attempts to control outside currencies and economic practices.

**Gendered Production Systems**

The ways that the brother-sister cross-sibling dyad organizes production and transfers through their spouses and affines are similar throughout the Pacific, relating to deep cultural roots of these predominantly Austronesian peoples. While the Melanesian islands also include non-Austronesian peoples, similar systems operate in the Papua New Guinea Highlands, connecting male elaborations of hard wealth (including shell traded from the coast) through pigs fed by their wives, and exchanged in regional competitive exchanges (Strathern and Stewart 1999). Throughout the Pacific, societies elaborate men and women’s productive capacities to competitively transform foodstuffs into wealth, and today link with and mediate introduced foodstuffs and currencies.

Malinowski’s (1922) classic example of the long-established Massim regional kula trade documented its early 20th system of a double circle of delayed exchanges of two shell valuables (necklaces and shell bracelets) between partners on participating islands. Weiner (1976) studied the system as it operated in the late 20th century, analyzing the complex engendering of the wealth system and its integration of
introduced money. Simply stated, in the Trobriand system brothers competitively produce and provide yams to their married sisters and their husbands. The stored yams are used as food, as seed, and as the foundation of the male hard wealth items (greenstone blades and the shell valuables). As high chiefs are polygamous and commoners monogamous, chiefs in particular accumulate yam wealth that can be transformed into hard wealth and kula valuables. In turn the sisters provide their brothers with the soft wealth (banana fibre bundles and skirts) required for ceremonies associated with major life events and especially mortuary ceremonies that ensure the reproduction of the clan and lineage. In today’s market economy supported by tourism and wood carving, the sister’s husband expends cash to support his wife’s collection of banana fibre bundles (relative to the number of yams his brother-in-law provided). This is an example of the male production of starch foods, here root crops produced and elaborated by men, and soft textile wealth produced and elaborated by women, connected through the brother-sister cross-sibling dyad and their respective spouses that serves to transfer and competitively develop food production and wealth.

Weiner (1980) argued that Malinowski ignored role of textile wealth and in particular the importance of banana fibre bundles. She demonstrated how in the late 20th century Trobriand islanders increased their use of readily produced banana fibre bundles, arguing that in the process they protected the greenstone valuables from inflation. One of the classic problems of integrating local and introduced currencies has been to avoid inflation and destruction of the local currency and economy (Bohannon 1955, Akin and Robbins 1999).

In Polynesian societies one can see the same key relationships in which the brother-sister dyad is foundational to societal power, and the ways that transactions of food and valuables (in this case especially fine mats and tapa) connect lineages linked through marriage. Indeed the regional component of these links is of long standing, as documented by the circulation of spouses and valuables linking Samoa, Tonga and Fiji in particular (Kaeppler 1978).

The Micronesian examples are also widely regional; studies document trade systems that connect the Carolinean atolls with the high islands of Yap through a hierarchical chiefly system linked by regionally dispersed matrilines to the atolls to the east. The Sawei system linked the small atolls of Eastern Carolines through Ulithi to the high island of Yap, bringing tribute of woven textiles and other items. Although the logic of this Sawei exchange established the supremacy of Yap, it also provided atoll dwellers access to vital high island resources (Lingenfelter 1975, D’Arcy 2001). Analysts note that the value of the foods and high islands products given to the atolls in response was greater than that of the tribute received (Alkire 1989 [1965]). Sawei relationships are still foundational to contemporary practices in this state of the Federated States of Micronesia, although disaster relief is now primarily provided through ships and Air Micronesia planes.

Smith (1983:78) has diagrammed the structure through which in Palau the transfers of the produce of men and women are channelled through brothers and sisters to their respective spouses (representing affinal clans). Over time as the movement of starch foods produced by women and protein foods produced by men are transferred by the woman to her husband’s sisters; in turn she earns the right to claim valuables from her husband’s sister. Palauans specify that it is baskets of taro that are the “standard”
upon which their bead currency is evaluated (3 – 30 baskets depending upon the period).  
Figure 5. Palauan Gendered Food to Valuables System (Smith 1983:78)

Why Consider Island Production and Wealth Systems?

Why should we study such complicated traditional systems in today’s world? Local variations are constantly developing throughout the Pacific as men and women continue to transfers foods and goods within kin groups at home and abroad, today including class- and work-mates in the transactions. Former prestige offerings (betel nut, kava) are commodified, earning domestic cash or export income either for domestic purposes or generating capital for investments. Past practices have been modified to fit current needs, including ways to find capital that is unavailable through existing banking systems that find it difficult to deal with differing land tenure systems when seeking collateral.

The economic flows to and from Pacific individuals, families, and institutions are considerable and the significant contribution of agricultural and fishing products to family economies is generally undercounted. For some Pacific nations the magnitude of the undercount is estimated from 2 to 4 for fisheries, and 2 to 8 times for agricultural production (see below for details). Equally important, we have incomplete data on transfers from individuals and households to individuals and institutions at home and overseas. These economic transfers are a major component of political power in Pacific economies. Many Pacific nations do not monitor and tax goods and remittances sent and received through the post, courier, and air freight. This family-level transfer is a major contribution to the transportation of goods to and from the islands. Contributions to the churches and church leaders, and rental payments for land use by foreign companies or nations may or may not be accounted for. For example, current studies of effects and magnitude of church donations in Samoa
indicate that the impact of such transfers are considerable and affect family, village and national development possibilities (Macpherson personal communication). These issues are raising concerns in the islands and in Aotearoa.

Engaging with market economies
Pacific valuables and attenuated exchange systems today often serve as a point of articulation between indigenous/local commodities and value systems, and indigenous currencies can provide security and protection against environmental, colonial and post-colonial forces, or as a medium of cross-national positioning of valuables. The indigenous movement of people, commodities, and valuables between and among sites continues to confound international attempts to assess “national accounts” and GDP figures. International economists generally ignore or discount contemporary local wealth systems. Yet there is often a strong correlation between successes of societies or regions and the strength of the local wealth systems, as two island societies discussed here – Palau and the Trobriands – indicate.

The Politics of Production: Negotiating the Global
We must also recognize that island residents may actively collude in the international ignorance of the monetary value of “subsistence” production. Thus in the 1970 and 1980s many rural Palauans involved in local farming and fishing cooperatives chose not to report income from farming and fishing to the social security office. They thus saved paying social security tax, and were willing to forego receiving social security benefits upon retirement. This was not just tax evasion, but related to their recognition that their control of food production was vital to their economic and hence political independence. In similar ways, Yapese women refuse to allow the market sales of their taro in order to maintain their economic/political power within this island (Egan 1998, 2004). Although a trust territory, Palau was part of the only UN strategic trusteeship, over which the US held veto power through the UN Security Council. For over a decade Palau was embroiled in conflict with the US over its demands to use lands for military training purposes for which little compensation was offered.

Palauans were able to avoid economic pressures. On their third constitutional referendum Palauans succeeded in having their constitution recognized, including nuclear-free provisions clauses that were in conflict with their agreed-in-principle “free” association with the United States. In a series of 1980s plebiscites on the Compact of Free Association with the US, voters refused to provide the 75% waiver of the constitution’s nuclear-free clauses, hence rejecting the compact. Under President Salii, one of the nation’s brightest leaders and former Economic Development Officer for the USTTPI, the proposed compact was again referred to the voters. Salii had resided outside Palau for decades, and was out of touch with local economies and the ways they were reflected in official statistics. In response to US fiscal pressures on Palauan “deficits” in the economy, he laid off two-thirds of all public sector employees. Public sector wages were the basis of most private sector purchases, hence such layoffs could reasonably be expected to collapse Palau’s economy and assert economic pressure on voters to finally accede to political demands to agree to the compact of free association. These expectations did not prove accurate. Palauan families were able to forego wage income by returning to taro patches for their key starch foods, to fishing and livestock for their protein foods.
Nor did they need to pay housing mortgages; banks had refused to lend on communally owned land so housing was self-provided or more generally supported through adaptations to the earlier ocheraol exchange discussed below. Such exchanges were suspended and the food system redirected toward feeding the families. One colleague reported that after she and her husband were both laid off she made arrangements for store credits, and that at the end of the four month lay-off period she had accumulated a debt of only $40 USD in purchases to feed her family including five children and other relatives who might eat with them (Nero 1994). Palauan voters rejected the compact with an even higher percentage in the next plebiscite.

After Palau’s delayed independence in 1994 (after changes in the US-Palau agreements and eventual amendment of the constitution and ratification of the Compact) the government attempted to better understand and control its economy to support its hard fought political independence. University of Guam economist Paul Callaghan and Palau Planning Office staff conducted two important censuses to understand parts of the “informal economy”. The first assessed the role of betel nut, the second the ocheraol housing exchange system. These provide rare documentation of the economic value of informal sector practices.

New Commodities: Betel case studies
The fruit of the betel palm Areca catechu is widely produced, gifted, and traded in the Western Pacific. Today it is sold by small entrepreneurs in local markets, making it one of the key local products of the “informal” economy that can provide people with income to meet new cash requirements for items such as school fees, and trade store goods such as imported foods. (The incursion of Chinese street merchants into this lucrative betel nut trade contributed to recent unrest in the Solomon Islands.) In Micronesia betel use is extending into islands where it was not previously chewed, and has now become one of the Federated States of Micronesia’s key export items. Similarly, Mekeo entrepreneurs in Papua New Guinea have benefited from betel trading to Port Moresby in recent decades, and also used income to support building permanent houses and a church and the purchase of small potentially capital-producing items (vehicles, generators and freezers) as well as direct consumption items. Most notably, “Three voluntary credit societies had been established. … replacing old family houses … building a new church” (Mosko 1999:56-67). However, general control of the new money affected political relationships, and chiefs and sorcerers attempted to reassert their power by taxing the construction of houses of European materials and design on the grounds that they approximated fine chiefly houses (Mosko 2002:100). Economic and political powers are closely entwined in Pacific societies.

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10 In their 1995 survey of betel nut chewing amongst a sample of 7.9% of the total Palauans over 5 years of age (then resident) Ysaol, Chilton and Callaghan (1996) found that 76% of respondents used betel nut with a slightly larger percentage of female to male (80%;72%), with a mean number of 15.9 chews per day. They estimated that annual market value of the sales of the betel components (betel nut, leaf and lime less costs of imported cigarettes) exceeded $9.2 million in Palau in 1995.

11 Mosko (1999:53-56) did a census of one village of 45 households (350 residents) over a three-month period. Extrapolated to an annual income, for this one village the annual value would have been about 800,000 kina (NZ $1.5 million at the time).
Both Palau and Mekeo have successfully translated local food/commodity exchange systems into the production of contemporary housing, clinics, and churches. Do these create indigenously controlled capital, or should they be conceptualized as a consumption cost?

There are reports of lucrative betel markets operated by grass roots entrepreneurs in other parts of Papua New Guinea, notably in Madang and Boikulu, with a reported multi-million kina betel nut trade from the Ramu region. Spin off transportation businesses by motorized canoe and bus hires also serve the traders. It is expected that the national estimates for betel nut of 78 million PGK +/- 18 million, may be low for this nation of over 5 million, especially in comparison with the estimates of $9 million USD for Palau alone with a chewing population of less than 15,000.

Adapting House Building Exchanges

The second Palauan informal sector census was that on the Ocheraol, or traditional money-raising function that is used to fund major construction of clan buildings. This census was conducted in 1994, covering 44 ocheraol functions held in the national capital and population centre (over 2/3 of the total) (Ysaol, Chilton and Callaghan 1995). Oriented around family lineage and clan relationships that it strengthens, the ocheraol is an example of the group orientation of Palauan society and its collective values. A constantly changing custom that adapts to new economic as well as political and social forces, the exchange functions today attract participation and funds from class and work mates and Palauans overseas. The competitive exchanges are held only in the capital city of Koror and regulated to avoid Christmas and the beginning of schools. The range of money earned in an ocheraol range from $3,000 to $100,000 (USD) or more, with an average of just under $28,641 in 1994. In the past only Palauan money was used (beads that form part of the indigenous wealth system of currencies); today the US dollar is the national currency. In the 1994 functions only 12 pieces of Palauan money were involved.

The financial impact of ocheraol function in 1994 alone was considerable. “These 44 ocheraol functions were associated with construction of approximately 56,600 square feet of new building space valued at close to $2.0 million. New shelter was provided for 237 people” (Ysaol, Chilton and Callaghan 1995:16). The ocheraol provided 69% of the costs of these buildings. The 44 events each averaged 176 participants, for a total of 7,742 people – about half of the country’s adult population. This adapted exchange provides important capital, as it is very difficult to obtain bank loans for housing construction since the land tenure system recognizes clan/lineage as well as individual ownership, and much of the land in Koror is controlled through a system of leasing through the state government. The ocheraol system makes “a major contribution to the availability of public housing and the economic viability of the private sector small scale construction and food preparation industries” (Ysaol, Chilton and Callaghan 1995:19).

To a certain extent the success of Pacific agriculturalists is closely linked to the success of their nation’s monetary economy. As the Palauan economy began to grow and wages increased in the growing market sector, the remaining farmers and fishers could command high prices for local, fresh produce demanded for urban households and special events, and the growing tourist market. Palauan entrepreneurs then began to import Asian workers to farm and fish to supply these products.
Safety Net Implications of Remittances and Inter-Household Transfers in the Pacific

The complex wealth systems discussed above involve substantial exchange and redistributive activity. There are at least three reasons for interest by economists in such activity: First, to the extent that redistribution reduces longer term inequalities in living standards it is of interest because most evaluations of social welfare consider both the level or growth in income (or consumption) and the distribution of that income or consumption across the population. Moreover, to the extent that there is an existing informal safety net, the introduction of any public transfers program (which may be partly funded by aid, so it should be of interest to the donor community) may be less effective than expected because public transfers could crowd out the existing informal safety net (Dercon, 2002).

Second, remittances and other transfers may act like insurance in the sense that they provide assistance for those people who find themselves in temporary distress (Cox and Jimenez, 1990). In other island regions remittances have been shown to provide partial insurance for the damage caused by natural disasters (Clarke and Wallsten, 2003). Similarly, Connell and Brown (2005) suggest that remittances in the Pacific may play a key role in reducing national and household vulnerability. For example, in the two months after Cyclone Ofa, which struck Samoa in 1989, remittances were 70 percent higher than in the same months of the previous year as immigrants who had not remitted for some time sent money to friends and relatives (Macpherson, 1994). The insurance role of transfers is also illustrated during the 1997 food shortages in Papua New Guinea that were caused by frost and drought during the El Nino conditions. Consumption of imported rice soared by 58,000 tonnes (40 percent above the previous level) during this event, and much of this reflected private transfers rather than supply by aid donors, who started food distribution after the peak of the crisis (Whitecross and Franklin, 2001). Rural people with relatives in urban areas received money which was used to help pay for imported food during the crisis but people in poor and isolated places with no urban kin were unable to compensate for the loss of their traditional foods (Allen, Bourke and Gibson, 2005).

Third, a large literature argues that remittances to Pacific Island countries have undesirable economic effects. In particular, they are believed to contribute to over-valued real exchange rates by pushing up domestic wages and production costs, which reduces international competitiveness (Ahlburg 1991). In this sense, remittances may have effects like that of other booming sectors, such as mineral exports in Papua New Guinea, leading to the so-called ‘Dutch disease’ where resources flow out of other sectors that in the longer-run may have greater comparative advantage (Sturton, 1992). For example, Faeamani (1995) suggests that remittances are associated with a reduction in garden size and food production in Tonga. In addition, Borovnik (2006) gives an example where the difficulty of transferring remittances to the outer islands in Kiribati has contributed to the urbanization of South Tarawa, with consequent environmental problems. On the other hand, a more positive view of the developmental impact of remittances in the Pacific is reported by World Bank (2006).

Despite the considerable literature on remittances and inter-household transfers in the Pacific there is no consensus on the impact of these transfers on the distribution of income, nor on the responsiveness of transfers to short term shocks. Pessimistic views
about the ability of informal transfers to act as a safety net are reported by Morauta (1983, 1984) and Mounsell-Davis (1993). In contrast, Ward (1977) and Norwood (1984) argue that reciprocity still operates and income is spread widely through the community and Borovnik (2006) argues that remittances from seafarers act as a safety net in Kiribati.

Highlighting this lack of consensus may be important in case policy makers and external observers presume that just because transfer networks are so prevalent this will automatically give a built-in social safety net. That this is not necessarily so was cogently argued by Louise Morauta, over 20 years ago:

..not everyone who needs transfers receives them or receives enough. This is because transfers in the wantok system are not transfers of charity or in a state welfare programme. They are part of a system of personal obligation, and some people who badly need transfers have nobody to help them, either because they have no relatives living near or because the relatives they do have are too poor or otherwise unwilling to help. Morauta, 1983, p.8

Examination of the evidence may also help determine the extent to which these informal transfers do constitute a safety net. Therefore in this section we describe patterns of remittances and inter-household transfers in three locations in the Pacific (urban and rural Papua New Guinea and Tonga). These locations are chosen to illustrate several contrasts, including between international remittances and domestic transfers, between urban and rural areas, and between urban squatter settlements and more formalised urban residential areas. Full details are provided in Gibson (2006a).

The empirical framework is based on a seminal study of transfers in Indonesia (Ravallion and Dearden, 1988) which shows how an econometric model can be used to infer the attitude of remitters with regards to inequality amongst the recipients. The key result from this model is an elasticity, which shows what the percentage change in transfers would be for a one percent change in the recipient household’s income. If this elasticity equals one, transfers rise or fall proportionate to recipient households’ change in income, and therefore transfers are a constant share of recipient household income. Hence the distribution of income is not altered, which implies no aversion to inequality on the part of people donating transfers. If the elasticity is less than one, transfers reduce disparities in income and make the distribution more equal because they do not fall as quickly as income falls (and so are rising shares of recipient income). If the elasticity exceeds one, transfers increase disparities in income and make the distribution more unequal than it was before, indicating lack of concern by donors that transfers motivated by other reasons may increase inequality.

Table 8 presents descriptive statistics on the remittance and transfer receipts. Approximately 90 percent of households in the Tongan and 1996 PNG samples were receiving transfers. About two-thirds of the urban PNG households in the late 1980s

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12 A wantok is someone from the same extended family, clan, village or province (or in more modern settings even from the same workplace or school). The term comes from neo-Melanesian pidgin, from "one talk" meaning people speaking the same language. With over 800 languages in PNG the average group size for speaking the same language is only 6000 people.

13 These squatter areas are likely to be viewed by many outsiders as some of the most deprived places in the Pacific, although this view is not always supported by statistical analyses of poverty which find that living conditions are significantly worse in the rural sector (Gibson and Rozelle, 1998).
were receiving transfers, noting that the questionnaire used for this survey only covered two-weeks of transfers rather than a whole year, which would tend to reduce the estimated participation rate. Households in urban squatter settlements appear to be more likely to be receiving (and making) transfers, even when comparing with a group having the same (low) income level. In all three surveys the median ratio of transfers to total expenditures (as a measure of long-run income) is about ten percent for net recipients.

Table 8: The Importance of Remittance and Private Transfer Receipts in the Pacific

<table>
<thead>
<tr>
<th></th>
<th>Percent of households receiving transfers or remittances</th>
<th>Receipts as a percent of total expenditure (for net recipients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonga</td>
<td>89.1</td>
<td>10.3</td>
</tr>
<tr>
<td>Rural PNG 1996</td>
<td>92.6</td>
<td>10.1</td>
</tr>
<tr>
<td>Urban PNG 1996</td>
<td>89.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Urban squatters, PNG 1985/90</td>
<td>78.5</td>
<td>12.0</td>
</tr>
<tr>
<td>Other urban, PNG 1985/90</td>
<td>60.0</td>
<td>7.6</td>
</tr>
</tbody>
</table>

Source: Summarised from results presented in Gibson (2006a)
Note that results are comparable within but not between surveys. There are separate surveys for Tonga, for PNG in 1996 and for urban PNG in 1985/90.

Figure 6 reports the key results for the elasticity of transfer receipts with respect to recipient income, which enables the impact on inequality to be evaluated. While the pattern of remittance receipts in Tonga suggests some aversion to inequality on the part of remitters, this is not apparent in the rural sector of Papua New Guinea for transfers (which are almost all sourced from within PNG rather than abroad). Indeed, for rural PNG, which is easily the largest population in the Pacific, it appears that transfers are actually inequality increasing. In the urban sector in PNG, while transfers appear to be inequality reducing one can also not reject the hypothesis that they have no effect on inequality. Moreover, when transfer receipts are disaggregated into day-to-day transfers and those made more infrequently (which are also typically larger) it is the more infrequent transfers which show the least aversion to inequality (especially in the rural sector). This may be because these individually larger transfers take place in ceremonial events (e.g. contributing to bride-price) where people are obligated to participate, even if it means poorer households donating to richer households.

The last two bars in Figure 6 look at comparisons just inside the urban sector of PNG (and from a different survey than that used for the other PNG results, so there is no comparison with the 2nd and 3rd bars on the chart). It is apparent that transfers reduce inequality in these data from urban PNG, and exhibit the greatest degree of inequality aversion outside of the squatter settlements. However, the detailed results reported in Gibson (2006a) suggest that there is not very much responsiveness to short term shocks like births and unemployment in either urban area.
What is clear from this analysis is that in the largest population studied (the rural sector of PNG), informal transfers either leave the distribution of income unchanged or make it even more unequal. Hence policymakers would be wrong to assume that high rates of participation in informal exchange networks throughout the Pacific imply equally good informal safety nets in all areas. Hence the adverse distributional effects of various policies cannot be ignored under the assumption that informal transfers will ameliorate the consequences. Moreover, it may be wrong to assume that these safety nets fail the most in settings that seem the most underprivileged (such as urban squatter settlements). Instead it appears to be amongst the more invisible poor in the rural sector that informal transfers are not acting as an effective safety net.

Women’s Development in Tonga

In 1995 aid donors and a lending agency provided funds to development banks in Tonga to finance micro-credit programmes targeting grassroots rural enterprises including a project that was designed to support local women in the production of tapa. Women borrowed money to produce fine textiles of the koloa category that are a key form of capital in the indigenous wealth system. The women produced the koloa and repaid their loans, a project considered a success by the Tongan, yet a failure by the Development Bank, on the grounds that the women refused to sell the handicrafts so produced. The increasing value of koloa relates to its increased demand from full-time wage earning women in Tonga and overseas who cannot make them for themselves. The project women recognized that the value of the koloa within the ceremonial economy was greater than in the “handicraft” market economy and retained them in the indigenous system. According to this logic they then successfully obtained the cash to repay the loans from their husband’s clan. Because this, the
Figure 7: The Tongan Ceremonial Economy (Horan 1997)
project was officially considered a “failure” even though the koloa was produced and the loans repaid. The women did use the koloa to support self-reliance and upgrade their household’s standard of living. Horan (1997, 2002) and Schoeffel (1994) argued that this “capital” investment in the local wealth system rather than international currencies also made sense within Western economic accounting, but this was not accepted at that time. Horan’s Figure 3.1 (1997 preceding page 74) diagrams the entire spheres of prestations and exchange in Tonga and reaching into migrant communities.

Van der Grijp (2004) provided a comprehensive analysis of contemporary Tongan subsistence and market agriculture, the migration/remittances/aid nexus. He noted that the successful development of squash as a cash crop contradicted the expectations of MIRAB models, and that the take over of the crop was recognized as contributing to its success. He argued that in order to understand Pacific economies one must recognized the dialectic processes connecting the indigenous and Western systems rather than considering them separable or that either system is all-powerful.

Recognizing Samoan Women’s Business

By the late early 2000s international donor understandings of the role of indigenous wealth were beginning to shift. The Women in Business Foundation (WIBF), established in Samoa to support the development of women at the grassroots level, has been successful in securing overseas funding to support small scale production of items targeted to the market of Samoans living abroad. These products include coconut oil, soap, and also fine mats (textile indigenous wealth) needed for cultural occasions overseas. One of the reasons for WIBF’s success is its recognition that a Samoan model of development must take into account Samoan values, traditions and culture ... In terms of income-generation, the most successful project of the organization is fine mat production. Although it is not a micro enterprise per se for the individual, it is creating employment in the rural villages and participants are able to be introduced to the microfinance scheme and become familiar with a banking system before undertaking some kind of microfinance. (WIBF Report, n.d.: p. 6)

We recognize, however that the complex transfers and integration of Pacific and international wealth systems may also of course serve as a way of siphoning global monies into the indigenous wealth system to the detriment, not benefit of the larger society, as publicly critiqued by Tuiatua Tupua Tamasese (26 April 2006) and under study by Macpherson (2006). Introduced currencies are far more portable, and their transactions less visible than indigenous valuables, and far more difficult to control. Great attention to the transactions may alleviate some of the abuse.

Western Perspectives: Assessing Subsistence

For decades academics have noted that local food production and the productive work of women, in the West as well as the islands (Waring 1999), is undercounted. To what extent is the food production of men and women in Pacific islands still undercounted?
Fisheries production: Region-wide ADB assessment

Recognizing that the importance of fisheries was not fully appreciated either by donors or Pacific nations and that existing data were based on inaccurate estimates, in 2001 the Asian Development Bank (ADB) organized a comparative assessment of Pacific fisheries for the Forum Fisheries Agency (FFA) and Secretariat of the Pacific Community (SPC) in conjunction with the World Bank. The executive summary underscores the value of fisheries in the Pacific and its undervaluation:

The research reveals that the full value of fisheries is likely to have eluded statisticians, and therefore fisheries authorities, government decision makers, and funding agencies. But the value of fisheries has never escaped the fisher, fish trader, and fish processor. The difference in appreciation, between public and private individuals, must raise the question of whether fisheries are receiving adequate attention from the public sector – including development, extension and training, and sufficient investment. (Gillett and Lightfoot 2002: 12).

The analysts set forth to assess the contribution of fisheries to the GDP of Pacific Forum nations, while recognizing common difficulties in calculating these contributions:

- Lack of coordination between fisheries agencies and statistical agencies
- Lack of data on subsistence fisheries and difficulties in isolating fishing from other subsistence activities
- [Identifying the contribution of fishing processing]
- Official export figures … characteristically undervalue exported commodities
- Data on small-scale fisheries are often scarce, as is technical assistance for its analysis (excerpted from Gillett and Lightfoot 2002: 21).

After assessing official fisheries statistics the team then re-estimated fisheries contributions for the late 1990s for 14 Pacific nations. They compiled data including the value of subsistence fishing based on “farm gate” methods (market cost less cost of getting that product to market), coastal commercial fisheries, offshore local and offshore foreign fisheries. To the degree to which they were available and segregated fishing from agricultural subsistence activities, Household Income and Expenditure Survey (HIES) data were used. For the Pacific as a whole, the re-estimations “indicated a higher contribution of fishing to GDPs than reported by national statistics.” Rather than contributing an average of 5.4% of GDP across all nations, the re-estimation of the contribution of fisheries to GDP was 7.0% (Gillett and Lightfoot 2002: 20). The effects of the re-estimation were more striking at the level of individual nation-states. While original reported data and the re-estimations were very similar for a few countries (Tuvalu, Tonga, the Cook Islands), for six of the twelve nations re-estimations doubled the figures for fisheries production, mainly due to the inclusion of subsistence fishing. Re-estimations for Palau more than quadrupled estimates of fisheries production due to the methods used (their subsistence estimates remained constant).

Turning to the consumption of fish within the region, as expected the Pacific consumption of fish far exceeds the world per capita consumption of 13.0 kg (Westlund 1995 cited in Gillett and Lightfoot p. 79). The important observation is that small islands have the highest kg/year per capita fish consumption rates. Kiribati tops the list of annual per capita consumption, with a range between 72.0 - 207.0
kg/yr/pc, followed by Tuvalu 85.0-146.0 and Palau at 84.0-135.0. The large densely populated island nations of Vanuatu (15.9 - 25.7), and Papua New Guinea (18.2 – 24.9) are lowest. Unexpectedly Tonga’s estimated per capita kg/yr fish consumption was also low (25.2 – 30.0), even lower than the Solomon Islands (32.2 – 32.7), Marshall Islands (38.9 – 59.0) and Nauru (46.7). These statistics demonstrate the range of per capita consumption among islands, and begin to suggest some of the other factors affecting fishing consumption including urbanization and reduced access to or pollution of nearby resources as well as access to low cost (and often low nutrition) imported foods.

The Contributions of Agriculture to Pacific Island Economies

Unfortunately, to our knowledge no comparable regional assessment has yet been completed of the contributions of agricultural sectors to Pacific economies. In this section we therefore include only a few case estimates of agricultural production that demonstrate the discrepancies between official statistics and analysts’ re-estimations. To a large extent these undercounts are the artefacts of poor access to data. For instance, the PNG estimates of agricultural production are extrapolations from a 1961/62 Survey of Indigenous Agriculture. In the Solomon Islands and Papua New Guinea, in which up to 84% of the population may derive their livelihoods from a combination of subsistence agriculture and small-scale cash-cropping and marketing, such undercounts are critical to understanding the local economies and areas in which they may be managed and strengthened.

Yet, “although the informal sector is the backbone of the Solomon Islands economy, only 1% of the donor funded development budget in 2004 was targeted towards the agricultural sector and the current level of donor commitments for future funding is not sufficient to effectively address the constraints identified to improve rural livelihoods.” (Bourke et al 2005: 6)

The percentage of the population who rely primarily upon local food production varies throughout the Pacific, with the Solomon Islands, Vanuatu and Papua New Guinea representing the high end of the spectrum. This percentage also changes depending upon circumstances. Even residents of small island nations such as Palau for which agriculture and fishing may normally contribute only 3.8 per cent of GDP (European Community 2002: 6), may during periods of political duress, like Solomon Islanders, return to farming and fishing to feed their families. Amounts and types of food routinely harvested for consumption and events are not routinely documented, nor are the complicated strategies farmers use to allocate the harvest among household, small-market, extended family and village/church event destinations.

In Papua New Guinea, Gibson (2001: 19-20) used nation-wide household survey data and found that “the aggregate value of food production was approximately K1.3 billion. …and… the national accounts may underestimate the value of household agricultural production by almost one-half”. In further research on the sweet potato in Papua New Guinea Bourke documented that in 2000 sweet potato provided over 60% of the energy diet in PNG, being the dominant staple for 2.8 million rural people in PNG (65% of the rural population) and a sub-dominant staple for another 17%, i.e. a total of 3.5 million people or 82% of the rural population (Bourke and Vlassak 2004). Moreover, the production and demand for sweet potato is not limited to rural
households. Hide and Bourke suggest that the underestimation of PNG’s agricultural production (including livestock such as pigs) is much greater, in the magnitude of eight times (not two times) that reported in the official statistics.

For the Solomon Islands the value of the 2004 consumption of staple agricultural crops (calculated by food energy requirements) was estimated at $325 million per year. A comparison to the value of the major copra and cocoa exports of $73 million in 2003 and $70 million in 2004, demonstrates the value of local food production to the Solomons’ economy (Bourke et al 2005). This does not count crops such as betel nut, and other commodities that are a significant source of cash income. Agriculture proved to be a highly resilient system that was able to meet the basic food needs of the rural 2/3 of Solomon Islanders during the period of ethnic tension from 1998 – 2003.

O’Meara (1990) provides an analysis of Samoan agriculture in the early 1980s. He too recognizes the importance of the social incentives that enter into villager choices, but also documents the poor return received by agriculturalists at that time in comparison with higher wage positions. He offers a full census of village economic activities and its values, noting however the difficulty in attempting to value subsistence products and fine mats. A more recent study (Egan et al 2006) documents Yapese food production and its intersections with global economies.

Urban food production is little documented. In 1990-91 urban production in Morata and Waigani suburbs of Port Moresby contributed 49% of household consumption, compared to 9% of fresh food purchased for other urban households (Levett 1992:4). This is an area for further development and research.

Creating a System of Comparable Statistical Approaches to Data: SNA-93
One of the internationally recognized systems for preparing national accounts is the System of National Accounts (SNA-93) produced by the Inter-Secretariat Working Group on National Accounts, that represents the Commission of the European Communities, the International Monetary Fund, the Organization for Economic Co-operation and Development (OECD), the United Nations and the World Bank. The system relies on being able to collect and compile data on all parts of the economy and to organize the measurement units in a codified and structure manner. The SNA is an accounting system that provides a format for comprehensive analysis, but how detailed the analyses can be depends somewhat on the detail provided in the accounts that a country compiles.

Households (S.14) are one of five institutional units used to define the total economy. According to the SNA-93 manual prepared for the Palau Government (n.d. p. 6) “the sector is diverse and can actually be the largest productive sector in an economy.” The Household Sector includes as a sub-sector The Informal Sector. Unfortunately as the manual notes (pp. 7-8)

This is an ongoing field of development for statisticians and the definitions of the informal sector remain fairly vague and therefore it is really up to Palau how best to define the sector. It may be desirable at some stage to come up with criteria to apply to the characteristics described in subparagraphs 5(1) and (2) of
the Annex to Chapter 4 in the SNA 93 manual or to see if this has been done for other developing Pacific countries.

Since this was written there have been additional reports on Informal Sector Statistics; additional conceptualization and protocols could assist in the collection of comparable data in HIES studies, especially ensuring that data on agricultural and fishing and other subsistence sectors are segregated.
Part 3: Implications

The purpose of this chapter is to draw attention to both conceptual and data quality issues of concern in assessing our understandings of Pacific economies. As the effects differ at community and national levels, we make no attempt to substitute existing data with re-estimations. In this final part we briefly consider some of the implications of the critiques we have raised, a few approaches that could assist in the collection of better data of comparative value for the region, and the benefits and costs of not developing better economic data on which to base national programs.

The need for regional approaches is recognized by regional organisations (i.e. Pacific Forum and South Pacific Committee (SPC) and major international donors (i.e. Asian Development Bank, World Bank, the European Community). Much of the work needs to be done at the regional level, designed and implemented by Pacific and international partners.

Developing the SNA-93 Household Sector Manual

The System of National Accounts (SNA-93) has already provided the framework in which the contributions of the Household Sector could be incorporated to better understand the national economy. International donors are supporting statistical training and development in the region; an increased attention to this sector and developing regional standards in this area would assist. Household income and expenditure surveys are an important tool; establishing comparable collection protocols, for instance that separate agricultural and fisheries “subsistence” production, would provide better comparable bases.

Benefits (and Costs) of Better Data on Food Production

The benefits permitted by developing projects from a better data base and understanding of the existing conditions, or the costs incurred without such data, are especially borne by local communities and Pacific nations.

As communities assess potential development projects, they need to begin with a full understanding of the economic values of current practices. Often these values only become visible when they are lost, such as the case when one of the three main municipalities of Yap State of the Federated States of Micronesia was affected by an oil spill by the KYOWA VIOLET (Nero 2006). Due to the spill their reef area and mangrove swamp was closed for all purposes in 2002 and the community sought compensation for lost income due to the cessation of reef/lagoon fishing and shellfish collection. Only because this community was included in an earlier anthropological study of Micronesian Food Systems were data acceptable to the court available to make the case. In 2004 the community received compensation not only for the documented loss of subsistence and market lagoon and mangrove swamp region affected, but more importantly received compensation for the long-term effects of losing the inter-generational transfer of knowledge from fathers to sons on the management, conservation, fishing and cultural distribution processes entailed.
On a positive level, the increased data available to Palauan planners as they instituted tax control of the small-scale export of reef fish (by air freight or accompanied coolers to kin and colleagues overseas) permitted better data to help manage the lagoon fish resources and protect them from over-utilisation.

Resisting Global Agro-Food Incursions
A focus on the monetary market and import/export economy without valuing local food production creates an environment in which nations seek export dollars to increase their GNP. An alternate approach would be to better account for the food production that is currently not counted. Murray (2001) argues that the export focus supports the further penetration of Pacific island economies by the global agro-food complex (not to mention mining complexes) that have to date had very negative impacts on Pacific livelihoods and environments.

Murray has assessed the local socio-economic and environment impacts of Tonga’s non-traditional pumpkin exports to Japan, and Niue’s taro exports to New Zealand. With regard to Tonga: “The sector is currently facing mutually re-enforcing problems of economic and environmental non-sustainability, and rural inequality has been further exacerbated through the boom” (Murray 2001:144). With regard to Niue: although “taro is one of the more successful Niuean exports… there have been few efforts by the government or other agents to provide the basis for the long-term sustainable development. … From an economic sustainability point of view the crop is highly vulnerable. … More worrying are the environmental implications of increasing taro production … with a devastating effect on ecosystems… No work has been undertaken to establish … [the] effect this has on the water lens.” (Murray 2001: 145).

He calls for academics to “document and critically analyse the unfolding of the [neoliberal] agenda and its constituent processes, and to explore means of minimizing the worst implications in detail. In order to do this it is imperative that the interdependence of global and local change is mapped out.” (Murray 2001: 145).

Increasing Value from Financial Transactions: Remittances revisited
Remittances are the fastest growing source of external capital for the Pacific Island economies and as described above, now total approximately NZ$600 million per year from all sources. Remittances can be expected to grow even further as short-term labour mobility is used as a mechanism to deal with seasonal labour shortages in New Zealand. However the transactions costs of sending remittances to the Pacific Islands are very high for the most widely used methods -- in the order of 15-20 percent.

These transaction costs are much higher than elsewhere in the world. Sending money from the United States to Central America and the Caribbean typically cost less than 10 percent (Gibson, McKenzie and Rohorua 2006). Market size does not seem to be a reason for high costs in the Pacific. For example, Tonga receives the same total level of money transfers as Ghana, but transaction costs from the United Kingdom to Ghana are less than five percent, compared with 15 percent for similar sized transfers from New Zealand to Tonga.
Finding ways to reduce the transactions costs of sending money to the Pacific is obviously of interest to policy makers in the Pacific Islands. However it is also of interest to the Pasifika population in New Zealand, since they are one of the main sources of remittances. Moreover, remittance costs are an issue that intersects with both population mobility and international trade and so is a good example of the cross-cutting issues at the heart of the current study. Finally, remittance costs are an issue where the interest of policy makers is relevant because appropriate interventions and innovations have the potential to lower these costs.

Evidence for the possibility of costs being lowered comes from the variation in costs amongst the different methods for sending money to the Pacific. For example, transaction costs are less than five percent when the recipient uses an ATM card to withdraw funds from an account set up by the person sending money. Not many remitters know of this method and ATMs are not always in convenient places in the Pacific Islands. There are also security concerns about family members using ATMs but these problems are obviously overcome by some remitters (Gibson, 2006b).

The variation in transactions costs for different methods are shown for the New Zealand to Tonga remittance corridor in Figure 8. The most popular methods are Western Union, Melie mei Langi (a church-based company), and bank transfers. On average, transactions cost for each of these popular methods take 15-20 percent of the amount sent, since the median transfer is $200. Costs for sending money to Samoa and Fiji are also about this high. These costs come from both the unseen exchange rate premium and the fixed fees to send, and sometimes receive, money. Sending fees are usually $20-$25 and so are large relative to the typical amount transferred (given that half of all transfers are below NZ$200).

![Figure 8: Transactions Costs (as Percentage of Amount Remitted) for the New Zealand to Tonga Remittance Corridor](image)

Source: Gibson, McKenzie and Rohorua (2006)
It is notable that for smaller transfers, *Melie mei Langi* is more competitive than either the international money transfer operators or the banks (except for using an ATM card). *Melie mei Langi*, is run by the Tokaikolo Fellowship church but can be used by people of any denomination. Money is transferred in under one hour, and can be received at two branches in Tongatapu and at branches in Vava’u, Ha’apai and ‘Eua, while there is one branch in Auckland. The fact that a new entrant without the reputational and financial infrastructure advantages of incumbent banks and money transfer operators can provide a competitive service is suggestive of the presence of rents being earned by incumbent operators.

Extrapolating from the spread between the most popular and the cheapest remittance methods in Figure 8 to the entire Pacific, avoidable transactions costs across the Pacific Island economies (and their diaspora in the developed countries) may total NZ$60 million per year (Gibson, 2006b). This amount might be justified as the price of services such as accessibility, familiarity and security that are provided by the incumbent operators. However it can also be viewed as a surplus able to be used by the Pasifika populations in New Zealand and the islands if lower cost operators introduce cheaper methods into these remittance corridors while still providing sufficient accessibility and security. Thus, understanding more about money transfer costs and choices is an important issue for the broader Pasifika community.

A simple but highly effective starting point would be for either an NGO, government or donor agency to maintain a publicly searchable database of the costs and other characteristics of various remittance providers. There are at least two examples that such a service could be modeled upon. The first is the [www.sendmoneyhome.org](http://www.sendmoneyhome.org) website, created as part of a remittance project of the Department of International Development (DFID) in the United Kingdom. This website has a searchable database that enables would-be remitters to easily compare the services provided by various money transfer operators and banks for transfers from each of seven immigrant host countries to each of 32 emigrant-source countries. The fees for both small (£100) and large (£500) transfers are reported along with the net amount that should be received by the recipient and the speed of the transfer. The second example is from Profeco, Mexico’s national consumer protection agency, which together with the Mexican consulates in nine U.S. cities collects weekly data on the costs of sending money to Mexico. A worksheet ([http://www.profeco.gob.mx/envio/cuadsacra.asp](http://www.profeco.gob.mx/envio/cuadsacra.asp)) is published each week for each city, showing the cost of sending US$300, the amount in pesos that would be received, the amount of time needed for delivery and where the money can be picked up in Mexico. Efforts like these can help improve transparency and choice for remittance senders and recipients. This greater information should lead to lower transactions costs, which should help to improve the development impact of remittances in the Pacific.

Improving Development Data
Another implication of the research reported here is the need for better distributional data in the Pacific which means enhanced programs of household surveys and improved access for researchers to these data. In particular, the results on inter-household transfers for urban PNG that were presented above are based on data that are 20 years old and it would be very useful to see if the apparent strength of the urban informal safety net has persisted in the face of considerable shocks from
macroeconomic and social disturbances. More generally, information on the response of households to various opportunities, such as emigration and remittance receipt, cash cropping and improved initiatives for food production etc, would be very valuable for assessing the impact on the welfare of the population in the Pacific Island economies.
References


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