

ACHIEVING GROWTH IN THE PACIFIC

A survey of growth and development issues in the Pacific islands

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Pacific island countries have similar economic problems to many developing countries, but there are some economic problems that are magnified in the former. These include diseconomies of scale in production and exchange of goods and services, high vulnerability to natural disasters and remoteness from major ports and export markets. Further, these countries concentrate on the production of a few primary commodities due to their narrow resource base and limited production facilities. Pacific island countries are also highly dependent on imports of intermediate and finished goods. Most Pacific island countries have experienced low average growth in output during the past decade while their growth rates have shown large fluctuations. Trade deficits have been increasing due to declining exports and increasing imports, causing an increase in external debt. With integration into the global economy, these countries face new challenges because of limited human resources, poor management skills and limited technology. Aid and migrant remittances have become important in filling the increasing trade deficits. Foreign direct investment (FDI) can also play an important role, especially if such investments reduce imports and increase exports through capacity building.

In this paper, we first survey some factors that are generally believed to be growth improving and create an environment for growth; these are foreign aid, FDI, trade, migration, remittances and external debt. Our sample of countries comprises the Fiji Islands, Papua New Guinea, Solomon Islands, Samoa, Tonga and Vanuatu. A growth-accounting exercise is conducted to determine the relative importance of factor accumulation and factor productivity. It is observed that growth in these countries is dominated by factor accumulation. We therefore conduct a simulation study with the Sato (1963) closed-form solution for output in the Solow (1956) model to show that increasing the investment ratio is important in countries such as Fiji, Solomon Islands and Papua New Guinea, because its growth effects persist for more than a decade. Finally, some econometric tests on the significance of aid for output and/or growth are conducted on a selective basis due to data limitations and the scope of this paper. The econometric results show that, in aggregate, aid has either insignificant or negative growth effects in Fiji, Solomon Islands and Papua New Guinea.

The sample period for most countries is 1975–2003 and the major sources of data are the *International Financial Statistics* of the

International Monetary Fund (IMF various years), the World Bank's *World Development Indicators* (World Bank various years) and the databases of the United Nations and the Asian Development Bank (ADB).

Developments in growth factors

Foreign aid

The effect of foreign aid on economic growth is controversial despite the large number of empirical studies. White (1992) and Hansen and Tarp (2000) provide good surveys of the aid literature and of the macroeconomic impacts of foreign aid. While White (1992) covers results from dual-gap models, Hansen and Tarp (2000) extensively examine the literature based on the controversial findings of Burnside and Dollar (2000).

The World Bank report (1998) concludes that aid is important for two reasons: first, there is a role for financial transfers from rich to poor countries; and second, effective aid supports institutional development and policy reforms. Burnside and Dollar (2000) examined the relationships between foreign aid, economic policies and the rate of per capita output growth using a panel of 56 countries in the period 1970–93. They found that aid had a positive effect on growth in developing countries that had credible macroeconomic and trade policies but had little impact in countries with poor policies. Subsequently, Easterly et al. (2003) examined the robustness of the Burnside and Dollar (2000) results with alternative definitions of aid and good policies and with the sample period extended to 1996. They found that the Burnside and Dollar conclusion that aid promoted growth in a good policy environment was not robust to the inclusion of new data or alternative definitions of 'aid', 'policy' or 'growth'. They emphasise, however, that their findings do not imply

that aid is ineffective but that adding data to the Burnside and Dollar study raises doubts about the effectiveness of aid and that policymakers should be less optimistic about the Burnside–Dollar findings.

Rajan and Subramanian (2005) apply a panel approach and find little evidence of a relationship between aid and growth. They conclude that aid does not work in more favourable geographical environments, nor are certain forms of aid better than others. Karras (2006), however, using annual data from 1960–97 for a sample of 71 developing economies, shows that the impact of aid on economic growth is significantly positive and permanent. Radelet et al. (2005) examined the aid–growth nexus using aid flows into 67 countries between 1974 and 2001 and concluded that what matters for growth is the type of aid. Their results show that aid for disaster management, emergencies and humanitarian relief efforts, including food, has a negative relationship with growth, while aid for environmental conservation, democratic reforms and strengthening health and education status affects growth positively.¹

One of the weaknesses in the aforesaid studies based on cross-section data is that they have limitations for country-specific policies. It is also hard to provide any rationale for the numerous specifications used in these empirical works—specifications that are essentially based on reduced-form equations. Easterly et al. (2003:2) observe that: '[t]his literature has the usual limitations of how to choose the appropriate specification without clear guidance from theory, which often means there are more plausible specifications than there are data points in the sample.'

There are only a limited number of empirical studies on the aid–growth relationship for the Pacific island countries. We describe their conclusions briefly here, but examine the details later in the paper.

Gounder (2001) estimates a relationship between the various forms of foreign aid (grant aid, loans and technical cooperation) and economic growth for Fiji for the period 1968–96. She shows that total aid as well as its components has a significant impact on growth. Jayaraman and Choong (2006) make similar observations; they argue that aid seems to have a significant long-run effect on Fiji's output. Feeny (2005), however, finds little evidence that total aid has contributed to economic growth in Papua New Guinea, although there is weak evidence that project aid has an impact on growth. Rao and Takuria (2008) find that aid seems to have a negative growth effect in Kiribati because aid seems to have created a dependence culture; and aid money is spent mostly on consumption goods, which creates little capacity in the economy. Hughes (2003) identifies inappropriate economic policies, aid spending on consumption rather than investment and misused funds as the main reasons for the failing impact of aid on growth. In light of these observations, it can be concluded that the relationship between aid and growth is controversial and, in our view, the transmission mechanism of aid seems to be a secondary issue.

Aid as a proportion of national income in our sample of countries is given in Figure 1. The aid ratio has a downward trend during the sample period of 0.1 percentage points annually. While it was about 19 per cent on average until the end of the 1980s, it declined sharply to about 15 per cent in the 1990s. This decline could have important implications for Pacific island countries since they are in the initial stages of development and are mostly fragile economies.²

Foreign direct investment

Foreign direct investment (FDI) is considered to be a catalyst for growth, capital accumulation and technological progress. De Mello (1997) surveys FDI

in developing countries and notes that its impacts on output depend on FDI spill-overs, increasing returns and value addition by domestic firms. Further, FDI is considered to be growth enhancing in the long run through knowledge transfer and improved management skills. In a similar study for the East Asia region, Hill and Athukorala (1998) surveyed foreign investment, focusing on three key issues: the impact of the economic crisis of the 1990s; the links between FDI and trade; and technology transfer and adaptation. They concluded that FDI played a pivotal role in economic transformation in the region. Schneider and Frey (1985), using a sample of 80 developing economies, concluded that FDI was determined simultaneously by economic and political factors, with the two most important economic factors being the level of development (as measured by per capita real gross national product, GNP) and the balance of payments. The crucial political variables were seen to be foreign aid (bilateral and multilateral) and political instability. Factors such as GDP growth, level of worker skills, inflation and wage costs were found to be less important.

Parry (1988) examined the role of foreign investment in the South Pacific nations. He argued that FDI was the main driver in the development of mining, forestry and timber processing, fisheries, tourism and financial and retailing services in the region. Jayaraman (1998) suggests that FDI could be considered as an alternative to foreign aid in Pacific island countries and argues that Pacific island countries have already initiated several economic reforms to increase the efficiency of FDI. Some sensitive issues, however, related to land tenure and property rights are yet to be resolved in order to see the full impact of FDI in these countries.

Gani (1999), using data from 1976–95, examined the contribution of FDI to Fiji's growth rate. His empirical tests showed

a positive relationship between FDI and growth and therefore that policies to increase the flow of FDI should be considered seriously. He argued that market size, openness to trade and the real exchange rate were crucial determinants of FDI inflows into Fiji. An ADB (1998) study on ways to improve growth prospects in the Pacific argued that the contributing factors to the region's low FDI were

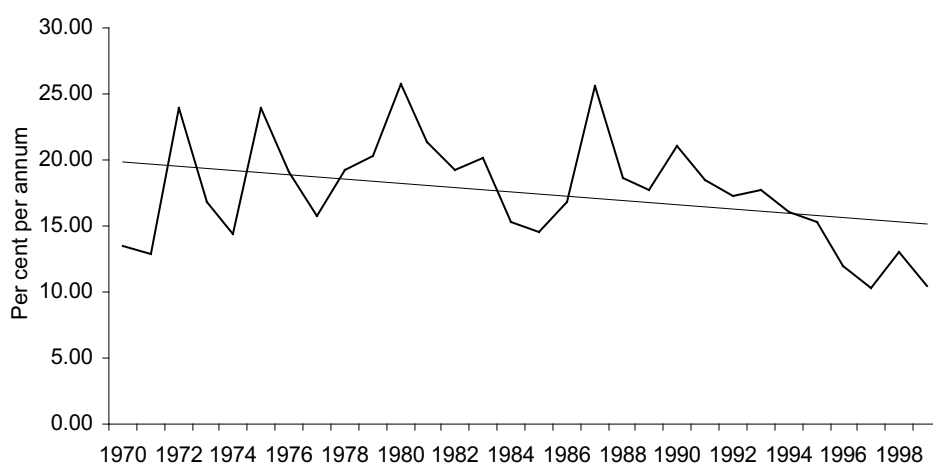
- law and order problems
- insecurity of property rights
- highly regulated investment regimes
- high transportation costs
- uncompetitive unit labour costs.

Against this background, some important issues in relation to FDI can be noted. FDI does not seem to have a direct link with growth—the growth impact depends on whether FDI builds capacity; the impact of FDI is realised through an

increase in productivity of sectors such as agriculture, forestry, fisheries and tourism; and FDI flows could remain low in light of significant hindrances such as law and order problems, insecurity of property rights, lack of infrastructure and the high costs of doing business.

Due to the unavailability of data for all countries under review, the ratio of FDI to GDP for selected sample counties is shown in Figure 2. Flows of FDI have declined sharply in recent years. On average, the ratio was about 3.5 per cent in the early 1980s and increased to about 5 per cent from the mid 1980s to the end of the 1990s. It declined, however, to negligible rates after 2000. In the case of Fiji and Solomon Islands, the FDI ratio was at negative levels in this period, indicating net outflows. Fiji also experienced net outflows after the 1987 coups and the devaluation of the currency in 1998.

Figure 1 **Aid as a proportion of gross national income, 1970–1998** (per cent per annum, sample average)



Source: Authors' computations based on data from the United Nations website and World Bank, various years. *World Development Indicators*, World Bank, Washington, DC. The linear trend line is plotted using the available data.

Migration

Studies of the impact of migration on economic growth are limited. Moody (2006) argued that migration had a significant impact on labour productivity and utilisation, although she did not formally test its effects on growth. The World Bank (2006) indicated that international migration posed opportunities and challenges and could therefore have either negative or positive effects on growth. It argued that while migrant remittances were generally beneficial, the migration of skilled workers could retard economic and social development in small, isolated countries. Athukorala (2006) examined emerging patterns of labour migration in East Asia from the perspective of labour-importing countries. He found evidence that migration was becoming an important factor in economic growth and the structural transformation of the high-performing Asian countries. He argued that there was a strong case for including migration on the agenda of regional trading agreements or other regional cooperation initiatives in order to devise regional and country-specific solutions to political opposition of foreign workers because labour flows impinged much more directly on national sovereignty and identity than foreign trade or investment.

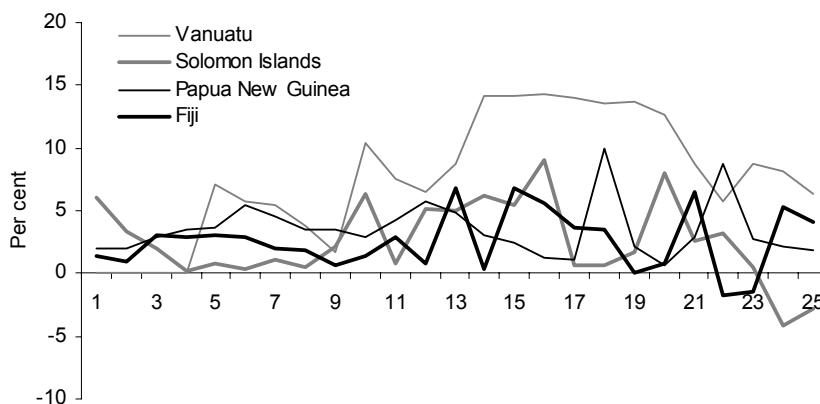
Some particular issues for Pacific island countries can be noted from the limited number of studies that are available. Bertram and Watters (1985) and Bertram (1997) noted the emergence of the system of 'migration, remittances, aid and bureaucracy' (MIRAB) in five small Pacific island countries—namely, Cook Islands, Niue, Tokelau, Tuvalu and Kiribati—where remittances were seen as a major source of income. This follows the opening of the New Zealand labour market to some of these countries since the 1950s. Appleyard and Stahl (1995) surveyed migration in Pacific island countries and noted that there was an increase in the

disparity of earnings and employment opportunities in the Pacific island countries relative to industrial countries such as New Zealand, the United States and Australia. The authors argue that Australia could assist countries such as Tonga, Samoa, Kiribati and Tuvalu by granting limited temporary access to its labour market. Recently, New Zealand has responded favourably to temporary employment in the horticultural sector for workers from some Pacific island countries.

The Asia Pacific Migration Research Network (APMRN 1997) report analysed the trends in migration from Fiji and its contributing factors for the period 1962–94. It showed that during the review period nearly 141,000 people (about 30 per cent of Fiji's population in 1966, or 15 per cent in 2005) had left Fiji, mainly for Australia, New Zealand, the United States and Canada.³ It noted that emigrants from Fiji were mostly Indo-Fijians but in recent years a noticeable number of indigenous Fijians were also migrating. Factors leading to migration were political uncertainty, lack of security on land issues and pull factors such as better education for children and higher incomes and standards of living abroad. Connell (2002) argued that apart from the factors mentioned in the APMRN report, natural hazards and radical changes in expectations of what constituted a satisfactory standard of living, a desirable occupation or a suitable mix of accessible services and amenities determined migration from Pacific island countries.

Mohanty (2006) argued that while migration led to brain-drain and loss of productivity, it also represented an opportunity to ease the pressure of the surplus labour in developing countries. He stated, however, that while this could reduce unemployment to some extent, it led to additional costs in terms of training and replacing the loss of skilled labour.

Figure 2 FDI/GDP ratio, 1979–2004 (per cent)



Source: Authors' computations using data the UN web site; World Bank, various years. *World Development Indicators*, World Bank, Washington, DC.

Firth (2005) noted that while migration was significant in Fiji, it was low in Papua New Guinea, Solomon Islands and Vanuatu because migrants from those counties could not meet the standards of education and skills required by recipient countries. He notes, however, that there is significant inter-island migration.

Some important issues pertaining to migration from Pacific island countries can be noted.

1. The persistent pull and push factors that drive migration are political problems, higher earning opportunities and better standards of living and education in the destination countries.
2. Migration benefits the countries through remittances and absorption of excess labour.
3. Migration tends to be harmful, especially in smaller countries, because it is difficult to replace human capital.

In general, therefore, we can say that migration is seen as a hindrance to growth

in the countries of origin. Figure 3 shows the trends in net migration from four Pacific island countries. It can be noted that migration has declined sharply since the early 1970s. In 1974, migration reached a record high of about 100 in 1,000 people, after which it started its downward trend. Although there was another peak in 1980, the migration rate has declined by about 0.16 per cent per annum since then. In recent years, net average migration seems to have stabilised.

Remittances

Remittances are flows of income from migrants to families back home. It is generally agreed that remittances help reduce poverty in the income-recipient countries. The officially recorded remittances received by developing countries in 2003 amounted to US\$93 billion—second to FDI, which was close to US\$133 billion.⁴ Studies indicate that there seems to be a weak positive relationship between remittances and economic growth. This is because

remittances tend to be used for investment as well as consumption (Hertlein and Vadean 2006). Solimano (2004) notes that remittances bring foreign exchange and can provide finance for capital formation to support growth in the recipient countries (Ratha 2004). In a report on Bangladesh, the ADB (2006a) observed that after an increase in remittances there was a turn around in the current account balance from a deficit in 2005 to a surplus in 2006.

Studies of Pacific island countries point to the mixed importance of remittances. Bertram and Watters (1985) find that the impact of remittances on average per capita incomes is small. In a recent assessment of the Fijian economy, however, the ADB (2005) argues that activity in Fiji is stimulated mostly by private consumption, which, in turn, is underpinned by private remittance inflows. This effect, however, could be short-lived, as Fraenkel (2006) finds evidence of 'remittance decay' in Tonga, Samoa, Marshall Islands and Cook Islands. In addition to these inconclusive findings, there are some problems in recording remittance data. Brown (1995) suggests that remittances can be classified as official and unofficial transfers and there are reasons why estimates of remittances tend to be inaccurate and inconsistent. He argues that these anomalies are due to definitional problems,⁵ noting that remittances are a major source of foreign exchange and incomes for households in the Pacific island countries. He argues that remittances are greater for Tonga and Samoa than their total export earnings. In these economies, domestic consumption expenditure is significantly greater than GDP, hence the negative domestic savings rate. Savings, however, tends to be positive and the savings–investment gap appears to be much smaller when GNP figures are considered; this is due to the large remittance inflows. Brown's survey of Tonga also reveals that

a significant part of remittances is used for investment purposes, such as in housing or agriculture. Moreover, remittances in kind are usually found to be in the form of investment goods, including building materials, light machinery and vehicles. For Pacific island countries as a whole, however, remittances make only a small contribution to savings and investment because they are primarily a source for immediate consumption. As Connell and Brown (2005) point out, remittances are used mainly to purchase food items, goods such as outboard motors, housing, airfares, education and even investment in some Pacific island countries.

In a recent article, Brown and Connell (2006) survey the migration status of doctors and nurses from Fiji, Tonga and Samoa and show that, overall, remittance levels appear to be higher among these households than others. They observe, however, that the propensity to remit tends to decline faster in medical professionals compared with other remitters. Taomia (2006), in examining the impact of remittances on the development of Tuvalu, argues that remittances together with foreign aid have been useful in maintaining the balance of payments. He finds that GDP and remittances follow similar increasing trends and he concludes that remittances have a positive effect on Tuvalu's economy. Therefore, migration and remittances are considered to be vital elements of Tuvalu's development.

Some noteworthy issues arising from the above survey are listed below.

- While remittances are an important advantage of migration, it seems that they create inefficiencies and dependence in most island economies. Remittances have been seen as a disincentive to work, leading to low productivity.
- The effects of remittances on economic growth and other variables are difficult to test formally; moreover, obtaining

reliable data for remittances is a problem.

The flows of remittances as a proportion of GDP in our sample of Pacific island countries are given in Figure 4. As can be seen, while the ratio of remittances to GDP is high in Tonga and Samoa, it is low in the other countries, especially in Fiji and Papua New Guinea. In all countries remittances have declined since 1995 by about 1.3 per cent per annum. In recent years, remittances as a ratio of GDP are, on average, fairly low.

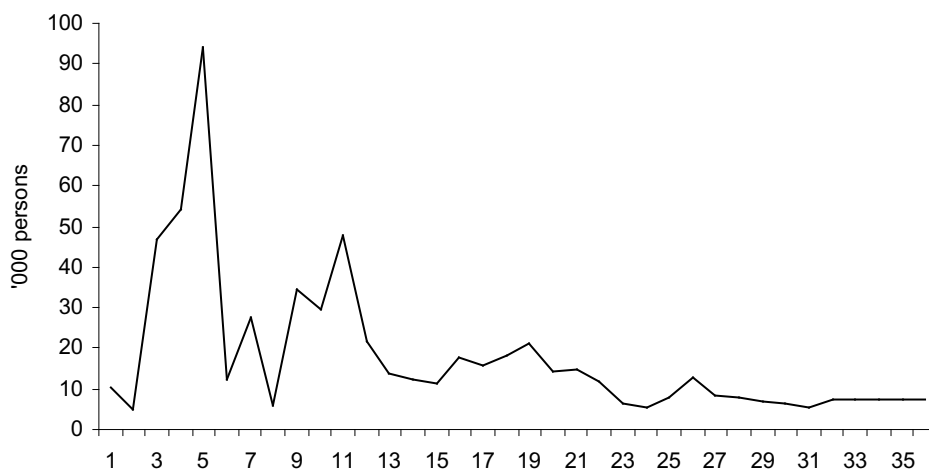
External debt

It is well known that excessive indebtedness tends to be a major impediment to economic growth and stability in developing countries. Sachs (1998) analysed economic growth in countries classified by the World Bank as suffering from debt-service difficulties and noted that they had fallen far short in terms of growth in comparison with

countries without debt-service problems. According to the World Bank (2001), high levels of external debt are increasingly being recognised as a serious constraint on the ability of poor countries to pursue sustainable development and reduce poverty.

Presbitero (2005) applied econometric analysis to 152 developing countries for the period 1977–2002 and found a negative relationship between external debt and economic growth as well as between debt service and investment. The effects were noted to be strongest in low-income countries. He concluded that for these countries a reduction of the debt-to-exports ratio from 200 to 150 per cent added more than 1 per cent to the growth rate of per capita output in the heavily indebted poor countries. Further, according to Presbitero, a reduction in the debt/service ratio can be twice as effective as an equal increase in foreign aid.

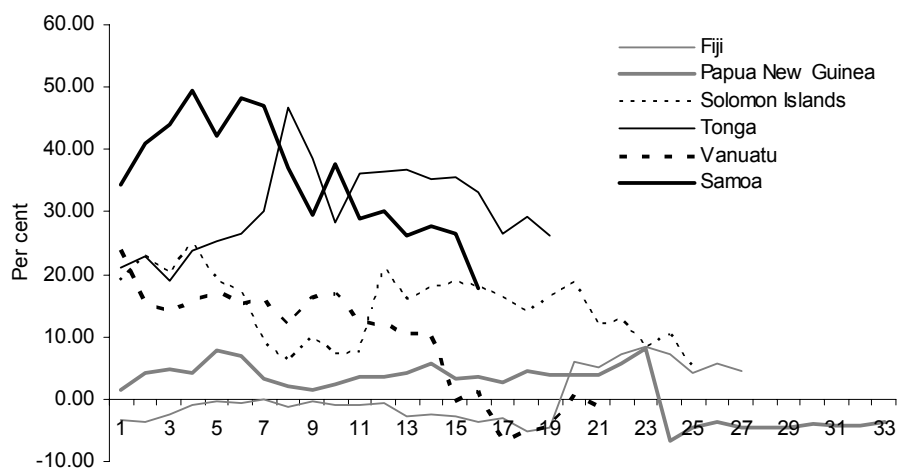
Figure 3 Average migration, 1970–2005



Notes: Data for Fiji, Cook Islands, Tonga and Samoa are available but for different time intervals. Therefore, the above graph represents average figures for these four countries. Migration is measured as per 1,000 population.
Sources: UN website; World Bank, various years. *World Development Indicators*, World Bank, Washington, DC.

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Figure 4 Ratio of remittances to GDP, 1975–2008 (per cent)



Sources: Authors' calculations based on data from UN web site and Asian Development Bank (ADB), 2006b. *Key Indicators 2006*, Asian Development Bank, Manila.

Clements et al. (2005), using data for the period 1977–99 for 55 low-income countries, attempted to determine whether debt relief could boost growth in poor countries. They noted that while high levels of debt could depress economic growth in these countries, external debt slowed growth only after its face value reached a threshold level estimated to be about 50 per cent of GDP or a net present value of 20–25 per cent of GDP. They claimed that a substantial reduction in external debt projected for heavily indebted poor countries could directly add 0.8–1.1 per cent to their per capita growth rates. They also found that external debt affected growth indirectly through its impact on public investment, as a result of the cost of debt servicing. Their results indicated that, on average, a 1 per cent debt-service increase as a share of GDP reduced public investment by about 2 per cent.

Schclarek (2004) explored the relationship between debt and growth for 59

developing and 24 industrial countries. The results showed a negative and significant relationship between total external debt and economic growth for developing countries. For industrial countries, high debt levels are not necessarily associated with lower GDP growth rates.

Studies on external debt and growth focusing on Pacific island countries are unavailable. From the survey above, however, we can conclude that: 1) there exists a negative and significant relationship between foreign debt and economic growth; and 2) debt servicing reduces the availability of funds for public investment, and hence indirectly affects growth. Debt ratios of the selected Pacific island countries are given in Figure 5 and it can be seen that, in general, debt ratios have increased twofold since 1975. The ratio was significantly high in Samoa in 1992, which led to its comprehensive reform program, but it has since declined. A notable trend is found in

Fiji, where the debt ratio was 5 per cent of GDP in the 1970s, but increased to about 38 per cent in the 1980s. Since 1987, however, it has been declining by about 1.4 percentage points annually.

Trade

Until the 1980s, import substitution and industrialisation strategies were dominant in developing countries. Since the late 1980s and 1990s, however, trade liberalisation or outward orientation has been advocated as the engine of growth and development. The links between trade and growth have been the subject of many empirical studies. Michalopoulos and Jay (1973) used the aggregate production function approach for 39 countries, together with exports as an auxiliary variable, and found that GNP growth was significantly correlated with the growth rate of exports. Michaely (1977) made similar observations for 41 countries for the period 1950–73. Saggi (2002) surveyed recent trade literature on international technology transfers, paying particular attention to the role of FDI, and argued that trade encouraged growth only if knowledge spill-overs were international in scope. Empirical evidence on the scope of knowledge spill-overs (national versus international) is, however, ambiguous.

Frankel and Romer (1999) examined the correlation between trade and income but could not identify the direction of causation between the two, as trade volumes were not determined exogenously. As a result, the correlation between trade and income cannot identify the effect of trade. This paper addressed this problem by focusing on the component of trade that was due to geographical factors. The results, which are consistent across the samples and specifications, confirm that a rise of 1 percentage point in the ratio of trade to GDP increases income per person by at least 0.5 of a percentage point. This increase is due

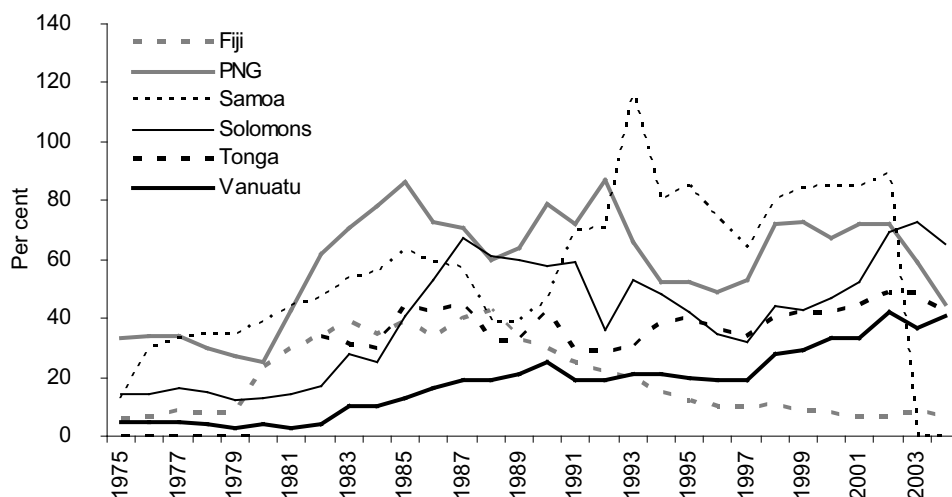
to the accumulation of physical and human capital, and by increasing output for given levels of capital. The results also suggest that intra-country trade raises income. There are, however, two important caveats to these conclusions. First, the effects are not estimated with great precision, and second, they cannot be applied without qualification to the effects of trade policies.

Baldwin (2003) surveyed the relationship between openness and growth, highlighting an important study by Rodriguez and Rodrik (2001). The latter's study criticised the conclusions of multi-country statistical studies that openness was associated with higher growth rates. Rodriguez and Rodrik conclude that openness, simply in the sense of liberal trade policies, does not guarantee faster growth. Baldwin argues that a key reason for the disagreement among economists seems to be the differences in what is meant by the concept of openness. Harrison (1996) uses a variety of openness measures to test the association between openness and growth. Although the correlation across different types of openness is not strong, there is generally a positive association between growth and different measures of openness.

During the past 10 years, Pacific island countries have adopted trade liberalisation policies as the appropriate strategy for economic growth. Most of them are now signatories to several overlapping regional and international agreements, encompassing trade, aid and investment. These agreements are seen as instruments for accelerating their economic development, creating employment and increasing incomes and standards of living (Narsey 2004). The regional trade agreements include: the Pacific Island Countries Trade Agreement (PICTA) and the Pacific Agreement on Closer Economic Relations (PACER), which includes Australia and New Zealand. The trade aspects of the Cotonou Agreement

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Figure 5 Debt ratio, 1975–2004 (per cent)



Source: Authors' calculations based on data from World Bank, various years. *World Development Indicators*, World Bank, Washington, DC.

with the European Union were also in the process of being negotiated in the form of Economic Partnership Agreements, which were expected to come into effect after 2007. Narsey expressed his concerns about the liberalisation of trade within the Pacific countries, as well as what he termed the 'weak bargaining positions' of Pacific island countries. He added that the monopolies (rather than consumers) would be the main beneficiaries of trade liberalisation. According to Narsey, Pacific governments have not analysed the long-term viability of industries affected by PICTA and have not examined the implications of PACER and World Trade Organization (WTO) compliance and how these could affect Pacific communities.

Prasad (2002) pointed out that trade liberalisation must accompany other reforms so that its benefits were not lost in the process. He added that the constraints for most of the Pacific islands were institutional, such as uncertainty about land rights, lack of

good governance, lack of infrastructure, lack of appropriate legislation and inefficient judicial systems. Tapuiaga and Chand (2004) explained that in the short term there were likely to be some adverse effects from liberalisation created in the process of reallocating resources from less productive to more productive sectors in Pacific island countries. These are likely to be in the form of the dismantling of some industries, job losses and losses of tariff revenue. They argued that Pacific island countries had the potential to promote industries such as information and communications technology, in which geographical barriers were not a disadvantage.

The average growth in trade ratios (the ratio of the sum of exports and imports to GDP) of our sample of Pacific island countries is given in Figure 6. While trade picked up sharply in 1983, it was quite volatile until 1987. Since then, the growth in trade in Pacific island countries has averaged less than 1 per cent per annum.

Empirical findings

Country-specific econometric studies of the determinants of growth with implications for policy are relatively few or non-existent for many Pacific island countries. The few studies that have been undertaken for Papua New Guinea and Fiji seem to have several limitations and are in need of further attention. Here, we report on the use of a methodological approach that we believe is useful for formulating policies to improve the growth rate of Pacific island countries. From a policy perspective, we believe it is desirable to distinguish between factors that have only level effects from those with permanent growth effects. In between these two, there are factors (for example, the investment ratio) that have permanent level effects as well as growth effects for a number of periods.⁶

Depending on whether the endogenous or exogenous growth model is used, however, their effects can differ. Variables such as the investment ratio will have permanent growth effects in the endogenous growth models but such effects eventually converge with zero in the exogenous growth models. The balance of evidence with time-series data seems to favour the exogenous growth models (Jones 1995). The aforesaid threefold distinction is especially useful for formulating policies for growth in Pacific island and similar countries where nearly 100 per cent of output growth is due to factor accumulation. In such countries, it is difficult to quickly implement institutional reforms for improving their long-run growth rates. In contrast, some policies, such as improvements in health, education, investment and export promotion, seem to be relatively less difficult to implement. Although their growth effects seem to be small, their effects can be realised quickly.

We first carried out a standard growth-accounting exercise to understand the

relative importance of factor accumulation and technical progress for the growth rate of output. This is useful for selecting appropriate growth policies from the available options and also for identifying policies that need attention by the international agencies and aid-giving countries.⁷ For example, if about 90 per cent of growth is due to factor accumulation and policymakers target higher growth rates, perhaps it is best to attempt to improve the investment ratio rather than contemplate institutional reforms that need considerable political will to implement and can take more than a decade to produce any significant effects. This does not mean that such reforms should be postponed. Policymakers should consider policies that have a quick effect on growth as well as those that are difficult to implement immediately and need longer periods to have significant effects. The fact that growth rates can be improved in the short and medium terms can induce Pacific island countries to become more interested in institutional reforms in an improved economic environment. Therefore, we take the view that in developing countries—and especially in Pacific island countries—policies that have quick growth effects deserve attention. The growth-accounting exercise gives some insights into such policy choices.

Growth accounting

A standard growth-accounting exercise was conducted for each of the six countries with the stylised values for the factor shares of 0.3 for capital and 0.7 for labour. The capital stock series were estimated using the perpetual inventory method, with the assumption that the depreciation rate was 4 per cent and the initial stock of capital was 1.25 times the level of GDP. The results of our growth-accounting exercise are summarised in Table 2.⁸ Except in Fiji, where total factor productivity (TFP) growth

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is positive but small, the entire growth in output in the other countries seems to be due to factor accumulation.⁹ The average growth rate in Fiji is about 2.3 per cent and in Solomon Islands it is 1 per cent higher. The coefficients of variation indicate, however, that fluctuations in the growth rates in all the island countries are much higher than in Fiji. Such large fluctuations indicate the predominance of the primary sector in the economy and various large and significant positive and negative shocks. In this respect, Fiji seems to have coped with shocks better than the other countries.¹⁰

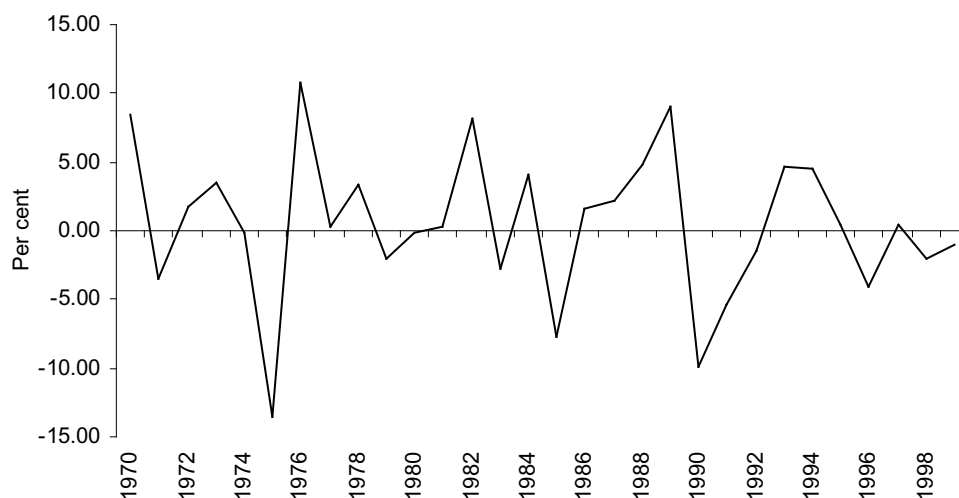
Nevertheless, it is possible to improve the growth rates in the medium term of five to 10 years and in the long run of more than 10 years. Fiji has been targeting a 5 per cent growth rate by improving the investment/GDP ratio from about 15 per cent to 25 per cent in the next few years. Given that the above growth-accounting results show that factor accumulation has contributed 95 per

cent to Fiji's growth rate, improving the investment ratio to achieve a higher growth rate seems to be a pragmatic medium-term policy option. Similar observations are valid for Solomon Islands, where 100 per cent of the growth rate is due to factor accumulation. Export promotion policies could help to improve growth rates over shorter periods, but they are unlikely to have large permanent growth effects in countries where the backward and forward linkage effects are small.

Some dynamic simulations

We also carried out simulations with the Sato (1963) closed-form solution for output in the Solow (1956) model. This specification is useful for understanding how the dynamic effects of improved investment ratios will evolve and how long these growth effects can be sustained. The Sato closed-form solution for output is given as follows

Figure 6 Growth in trade, 1971–2003 (per cent per annum)



Source: Authors' calculations using data from the World Bank database and International Monetary Fund (IMF), various years. *International Financial Statistics*, International Monetary Fund, Washington, DC.

$$Y_t = A_0 e^{gt} L_0 e^{nt} \left[\frac{s}{n+g+\sigma} (1-e^{-(n+g+\sigma)t}) + \left(\frac{Y_0}{A_0} \right)^{\frac{1-\alpha}{\alpha}} e^{-\lambda t} \right]^{\frac{\alpha}{1-\alpha}} \quad (1)$$

in which Y is output, s is the investment ratio, A_0 is the stock of knowledge at the beginning of the period, L_0 is employment at the beginning of the period, α is the exponent of capital in the standard Cobb-Douglas production function with constant returns and Hicks-neutral technology, $\lambda = (1-\alpha)(n+g+\delta)$, n is the growth of employment, g is the growth rate of technical progress, δ is the rate of depreciation of capital and $t = 0 \dots T$ is time.

Although this equation looks formidable, the effects of an increase in the investment ratio (s) on the growth rate of output can be simulated with Excel or a symbolic mathematics program such as Maple or Mathematica. The initial stocks of knowledge (A_0), labour (L_0) and output (Y_0) are set to unity because our objective is to compute the effects of a change in the investment ratio on the growth rate of output. The share of profits (α) is assumed to be 0.3, the rate of technical progress (g) is set at a slightly higher value of 0.01 and the rate of growth of employment (n) is assumed to be 0.024. These values imply that in the initial period ($t=0$), output in Equation 1 is unity, which is the assumed value.

These assumptions about the parameters and variables are close to their values in Fiji although the value for g is set higher at 1 per cent. This latter assumption is not important for the simulation results and implies only a higher steady-state growth at 2.5 per cent and in per worker terms a growth rate of 1 per cent. No matter what value the investment ratio takes, it does not have any effect on these steady-state growth rates. Higher investment rates have significant growth

effects only during the transitional period of the economy from one steady state to another. It is these transitional effects we are interested in because this transitional period seems to be quite long in calendar terms.

Figure 7 shows the additional growth effects (in excess of the assumed 2.5 per cent equilibrium rate) of an increase in the investment ratio by 3 per cent from 15 per cent to 18 per cent for periods two to 20. It is assumed that the 18 per cent investment rate is sustained during these years. The average additional growth effect of the 3 per cent increase in the investment ratio in the first five periods is 2.4 per cent, implying that the real average rate of growth of total output will be almost 5 per cent. These additional growth effects are significantly more than zero, even after 20 periods. The average additional growth effect over 15 periods is 1.64 per cent.

Figure 8 shows the additional growth effects of increasing the investment ratio from 15 per cent to 18 per cent in the first year, then to 21 per cent in the second year and to 25 per cent in the third year. The average additional growth rate in the first five periods is almost 3 per cent, raising the real growth rate of output to 5.5 per cent. Even after 15 periods, the average additional growth rate is 2.5 per cent.

These simulation results imply that many developing countries, including Pacific island countries, can increase their growth rates for substantial periods of 10–15 years by increasing the investment ratio. This does not mean, however, that there is no need to implement policies to raise their long-term growth rates through institutional reforms, learning by doing, human capital formation, improved health, greater openness and the myriad growth-improving factors that are identified as growth-enhancing variables in the endogenous growth models. According to our understanding, it takes time and political will to implement some of these

Focus

policies. Raising the investment rate is, however, relatively easy and therefore seems to be a pragmatic medium-term policy option. Countries in which this is a useful medium-term option include Fiji, Solomon Islands and Papua New Guinea. Even in the other four countries, where the investment ratio is already high, there is some scope—such as in Tonga—to increase the investment ratio by 3 or 4 percentage points.

Some standard policy measures for increasing the investment rate include tax concessions such as tax holidays, especially for the export-oriented industries, double depreciation allowances and low interest rates on loans for rural investments. Such policy measures have been implemented successfully in countries such as India. Given the special problems of the Pacific island countries, however—for example, law and order problems, small internal

markets, remote location and lack of satisfactory property rights, infrastructure and management skills—it is necessary to consider carefully how investment, especially FDI, can be increased. Tax concessions and low interest rate loans could be effective in Pacific island countries with larger populations and diverse resources, such as Papua New Guinea and Fiji; however, increasing investment rates in the smaller countries need special attention to identify the industries in which they have significant relative cost advantages. For example, while it might not be feasible to establish firms to assemble consumer electronic goods in Kiribati, it could be advantageous to establish small to medium-sized units to process fish products and more efficient plants to extract coconut oil. Therefore, we take the view that it is important to give attention to the identification of industries in which

Table 2 Growth accounting, 1972 to 2003–04

Country	Average rate of growth of GDP	Coefficient of variation	Growth due to factor accumulation	TFP	Investment ratio (1999–2003)
Papua New Guinea	0.010	5.314	0.010 (100)	0.000 (0)	0.17
Fiji	0.023	0.343	0.022 (95)	0.001 (5)	0.13
Solomon Islands	0.033*	1.060	0.034 (100)	-0.001 (0)	0.19
Samoa	0.010	4.109	0.010 (103)	-0.000 (-3)	0.40
Tonga	0.054	9.340	0.035 (98)	0.035 (2)	0.21
Vanuatu	0.010	5.970	0.011 (104)	-0.042 (-4)	0.30

* Although the mean growth rate for the Solomon Islands from 1970 to 2003 was positive and high, from 1995–2003 it was -0.014.

Note: Figures in parentheses are percentages.

Pacific island countries have a comparative cost advantage.

It could be argued that past attempts to increase investment ratios in Pacific island countries through concessional tax incentives did not yield the expected results. In fact, investment ratios in Pacific island countries show considerable variation around a stable or a declining trend, increasing during periods of incentives and declining afterwards because of either political instability and/or inability to compete in world export markets. Therefore, our suggestion that growth rates can be increased by increasing the investment ratio, based on simulations with hypothetical assumptions of the parameters, needs some caveats. Nevertheless, if the short to medium-term objective is to increase the rate of growth output, increasing the investment ratio is an attractive and perhaps a pragmatic option. How this can be achieved and, more importantly, sustained, needs further study

by specialists of industrial location and organisation. This analysis is outside the scope of the present paper but hopefully aid donors will provide such expertise to ensure that increases in investment ratios are made and sustained.

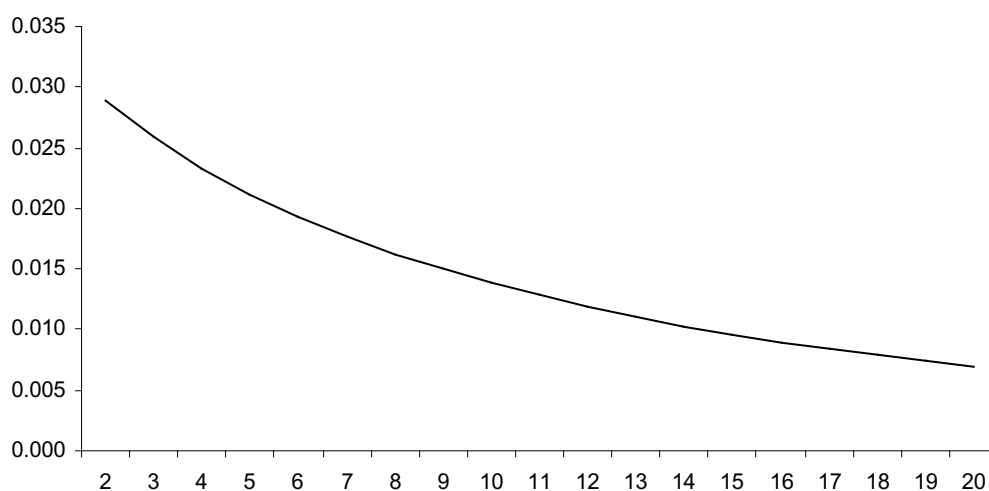
Further policy implications

We note that the impacts of an increased investment ratio on the rate of output growth are substantial and last more than a decade. Against this backdrop, it would be useful to examine the growth effects of other factors, for example aid, FDI, trade, foreign debt, remittances and migration. We have already reviewed trends in these variables.

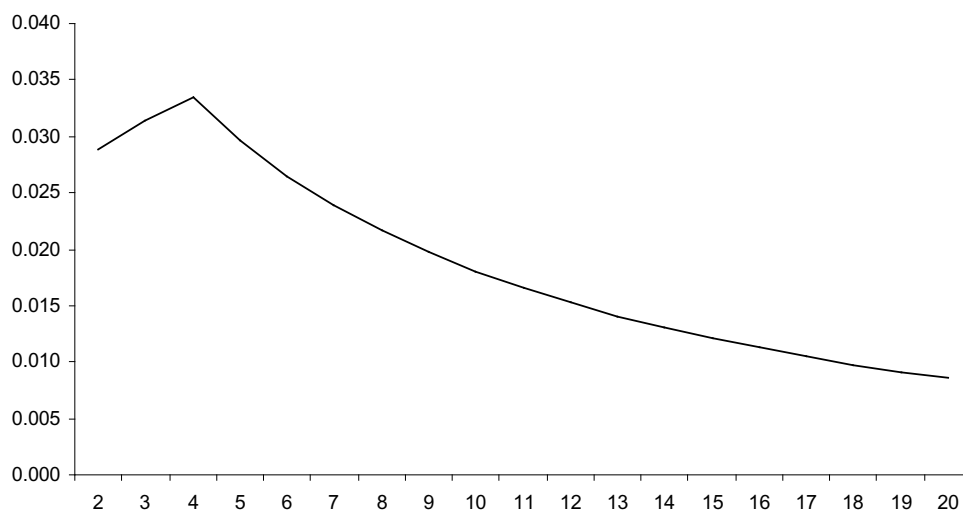
Some important issues worthy of further investigation are

- through what channels do these factors impinge on the growth rate or the level of output

Figure 7 Growth effects of $s=0.18$



Source: Based on simulations performed in Maple.

Figure 8 Staggered increase in s 

Source: Based on simulations performed in Maple.

- are their effects transitory or permanent
- if they have only transitory effects, how long do they last
- do some of these variables—for example, aid—have only negligible or even negative growth effects?¹¹

Answering these questions is difficult without the use of proper econometric techniques—a task beyond the scope of this paper. We do, however, briefly review the available empirical studies on the effects of aid on the growth of Pacific island countries.

In a comprehensive study using the bounds-test approach, with several exogenous variables and proxies for the policy environment but without an aid-policy interactive term, Feeny (2005) found that aid did not have a significant growth effect in Papua New Guinea. He noted, however, that project aid was effective and its coefficient of about 1.3 was significant

at the 10 per cent level. Rao and Takuria (2008) used a modified Solow (1956) output equation and observed that aid had a negative growth effect in Kiribati. In contrast, Jayaraman and Choong (2006), using a variant of the Burnside–Dollar specification and an aid-policy interactive term, noted that aid had a positive effect on the growth rate in Fiji but this was subject to diminishing returns. The main weakness in their work, as observed in Rao and Takuria (2008), is that because of an algebraic error they find that a 1 per cent increase in aid causes growth to increase by 300 per cent. Needless to say, this is implausible.

Gounder (2001) estimated an aid-growth relationship for the period 1968–96 using the autoregressive distributed lag (ARDL) approach. Although she uses the Solow (1956) model and shows some awareness that the estimated equation is a production function, she adds a number of other variables, following Khan and

Reinhart (1990), by treating them as shift variables. Furthermore, in spite of her elaborate attempt, there seems to be some confusion about the derivation of the long-run determinants of growth because in the Solow model the only long-run determinant of the growth rate of per worker income is the growth rate of technical progress. It is also not clear how the error correction term (ECM) is specified and estimated because no details are given. Gounder's results show that aid in total, as well as in its various forms, has a significant impact on the growth rate in Fiji; however, because of the aforesaid weaknesses, it is difficult to accept the findings on the effects of aid on growth.

In another interesting but critical analytical study, Hughes (2003) argues that the main reasons for the failure of aid to improve growth are inappropriate economic policies, misallocation (aid used for consumption rather than investment in infrastructure) and other misuses of funds. A subsequent empirical study by Rao and Takuria (2008) support Hughes' conclusions.

The conclusion drawn from this brief review is that there is mixed evidence to support the assumption that aid has any significant effects on the levels or the rate of growth of output in the Pacific island countries. Trade, FDI, foreign debt, remittances and migration might, however, have some short-run effects on growth rates if they promote an increase in the investment ratio. Further work is necessary to determine the significance of these effects.

Summary and conclusion

This paper surveyed the major variables affecting output and growth rates in selected Pacific island countries and note that aid does not seem to have any significant effect on output and growth. We find that FDI

might not have a direct link with growth unless it builds capacity in the recipient economy. Second, the impact of FDI in Pacific island countries is more profound in some sectors, but FDI flows could remain low in view of Pacific island countries' law and order problems, insecurity of property rights, lack of infrastructure and high business costs. We note that the factors that drive migration are partly a result of political problems as well as higher earning opportunities and better standards of living and education in the destination countries. Further, migration is beneficial to Pacific island countries through remittances and absorption of excess labour, but tends to be harmful especially in the smaller countries where it is difficult to replace human capital. We also find that remittances seem to create inefficiencies, a dependency culture and disincentives to work, leading in Pacific island countries to lower productivity. We also note that a negative relationship appears to exist between foreign debt and economic growth, and that in respect of negotiations of trade arrangements, the bargaining powers of Pacific island countries are important. From our empirical investigations, we can say that factor accumulation is the most dominant growth factor in these countries and that the contribution of total factor productivity is small.

Finally, we cannot claim that our conclusions are definitive because of data limitations and because our survey of a limited number of quantitative and regression results on the effects of aid on output and growth indicated that they have some drawbacks. Nevertheless, we hope that our paper provides a few useful methodological guidelines for further work on the growth of Pacific island countries.

Notes

- ¹ According to Radelet et al. (2005), aid for building infrastructure (roads, irrigation systems, electricity generators and ports) tends to affect growth rates fairly quickly. They also argue that in countries with better institutions, aid shows a stronger relationship with growth than in countries with poorer institutions.
- ² Gross national income (GNI) is used instead of GDP due to the lack of consistent data for the aid-to-GDP ratio for all the sample countries.
- ³ According to Firth (2005), most of the migrants left Fiji after the 1987 coups. Tapuaiga and Chand (2004) argued that Fiji lost one-fifth of its labour force in the period 1990–99. Tonga, Cook Islands and Samoa also experienced massive migration in the 1990s.
- ⁴ Ratha's (2004) observation, based on Solimano (2004), was that in per capita terms developing countries received 65 per cent of the world's remittances in 2001.
- ⁵ The UN (2005) report observes that there is no international framework for collecting data for remittances from household surveys; therefore, the concepts and methodologies applied to data are not uniform across countries.
- ⁶ Some factors, such as capital per worker, generally have both long-run permanent level effects and short-run growth effects. The latter effects can last only a few years while the long-run growth effects of investment seem to be spread across a number of decades.
- ⁷ Hoover and Perez (2004) note that there are more than 80 such potential growth factors that have been used in various studies with cross-section data. For country-specific time-series studies, however, the use of such growth factors could be limited because of the lack of data for most of these variables. Furthermore, it is difficult to get any robust results on the effects of even a few growth factors when data are available on an annual basis for only 30 or 40 years because of collinearity between these variables.
- ⁸ An alternative to the growth-accounting

exercise is to estimate a standard Cobb-Douglas production function based on the standard assumptions that there are constant returns, technology is Hicks-neutral and the stock of knowledge grows over time at a constant rate. This method of gaining an insight into the issues is a stochastic approach to the standard non-stochastic growth-accounting exercise.

- ⁹ These findings are not surprising. Young (1995), for example, finds that much of the growth in the East Asian economies is due to factor accumulation. Factor accumulation during 1966–90 contributed 105 per cent to growth in Singapore, 88 per cent in South Korea, 80 per cent in Taiwan and 70 per cent in Hong Kong.
- ¹⁰ Estimating the production functions mentioned in the earlier footnote will provide a better estimate of such random shocks. No doubt, a part of these large variations in the growth rate of output could be due to missing variables, structural breaks in the data, and so on. Nevertheless, we expect that the standard errors of these regression equations will be relatively large, even after allowing for missing variables and structural breaks, indicating that the effects of random shocks on the growth rate (or level of output) in these island countries are large.
- ¹¹ Hughes (2003) argues convincingly that aid has been counterproductive in Pacific island countries. There is now some empirical support for her observations.

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