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The Pacific Speed of Growth:
How Fast Can It Be and What Determines It?

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Abstract

This study aims to test within a relatively homogeneous group of small states what differentiates the growth performance of Pacific island countries (PICs) from their peers. We find that PICs are disadvantaged by distance and hampered by lower investment and exports compared with other small island states, but greater political stability, catch-up effects from lower initial incomes, and slower population growth have helped offset some of these disadvantages. On balance, policy-related factors, together with geography-related disadvantages, have led to growth rates in PICs that are much lower than in other small states. We also examine how real exchange rate appreciation, unfavorable developments in the external trade environment, and rising international transport costs may have contributed to PICs' slower growth over the past decade.

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I. INTRODUCTION

Economic recovery in most Pacific island countries (PICs) following the global financial crisis has been weak.[2] While the two resource-rich countries, Papua New Guinea (PNG) and Solomon Islands, have rebounded strongly on the back of high commodity prices, most other countries are still struggling with slow growth: annual GDP growth averaged just 0.3 percent during the period 2008-2010. With such slow growth, at least six PICs out of the eleven IMF members have yet to reach their pre-crisis per capita GDP levels. Slow income growth has made it more challenging to reduce poverty and youth unemployment, which has been a major social-economic issue in the region and need to be urgently addressed.[3]

Beyond the recovery, a key challenge is how to raise the growth rate in PICs over the medium term. The slow economic recovery in many PICs partly reflects the fact that they entered into the global financial crisis with a weak momentum of growth—weak recovery is often associated with weak growth. But what is more concerning is the secular decline in economic growth in the Pacific over the past decade, again, with some exceptions. This is in sharp contrast with developing countries in other parts of the world, most of which have managed to raise growth over the same period. Of particular interest is the comparison with other small states and low-income countries, which grew three times as fast as PICs during the 2000s after growing at a similar rate during the 1990s.

Does this mean that PIC economies are performing below their potential, especially over the past decade? There is a large body of literature that examines the economic growth performance of PICs compared with other country groups and relative to their own growth potential. Economic geography suggests that small states such as PICs are disadvantaged in economic growth: small country size makes it harder to exploit economies of scale, and remoteness and insularity increase the cost of transportation for international trade and technology dissemination. The empirical results are, however, inconclusive, complicated by

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[2] The focus of this study is the 11 Pacific island countries that are members of the International Monetary Fund: Fiji, Federated State of Micronesia (FSM), Kiribati, Palau, Papua New Guinea (PNG), Republic of Marshall Islands (RMI), Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

[3] See the *Forum Communiqué* of the 42nd Pacific Islands Forum, Auckland, 7-8 September, 2011, and Noble, Pereira, and Saune (2011).

how to take into account the unique characteristics of small states in terms of country size and geographical location.

Against this background, we attempt to address the following questions in this paper: (1) to what extent has economic growth in PICs been slower than other small states and other similar country groups? (2) have natural conditions, such as small size and geographical location, and external shocks, such as fuel prices and changing trade preferences, played a role in determining PICs' long-term growth? (3) why has growth in PICs slowed over the past decade? and (4) how might economic and other policies have affected PICs' growth performance?

We use a unique set of data for small states to examine PICs' growth performance and its determinants in comparison with other countries that have similar characteristics. Previous attempts to analyze growth in PICs tend to lump them together with other small states or examine them in isolation. We also take a long-run perspective in analyzing PICs' growth and pay particular attention to the declining performance over the past decade. In doing so, we examine the broad international environment as well as internal factors, including through case studies, that may have contributed to slowing growth in PICs.

The rest of the paper is organized as follows. Section II puts the questions we raised above in context by providing an overview of PICs' economic performance of the past decades in a broad regional and global perspective. Section III provides a brief review of the growth constraints in small states. Section IV provides an overview of the methodology and data used in the econometric analysis, followed by an attempt, in Section V, to identify and quantify growth determinants in small states, and in PICs in particular, with the aim to distinguish the role of natural conditions from policy-related factors. Section VI tries to shed some light on why growth in PICs has slowed over the past decade, and Section VII discusses the implications of the empirical findings for economic policies. Section VIII concludes.
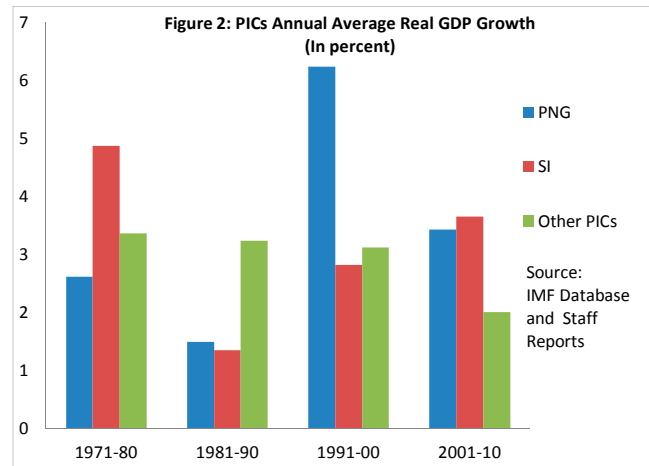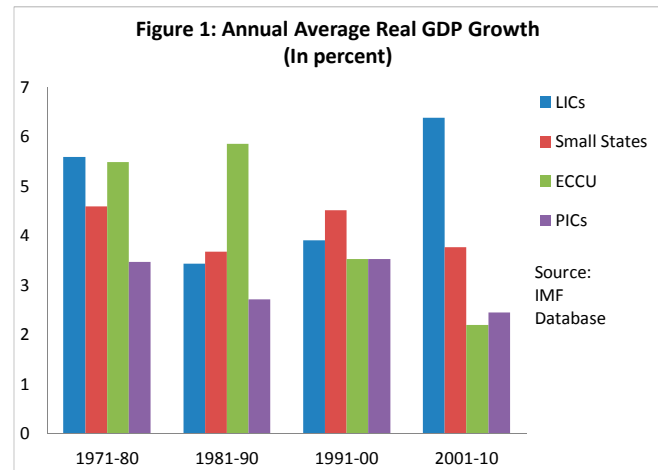
II. GROWTH PERFORMANCE—STYLIZED FACTS

It should be noted at outset that our focus on growth performance does not imply that this should be the sole criterion for assessing economic success. As noted by many, PICs have made considerable progress on many aspects of development, including Millennium Development Goals (MDGs). Nevertheless, as recognized in the development literature,

growth is fundamental to poverty reduction and broad human development, and its continued improvement is crucial for sustaining such development in the Pacific.

Overall, economic growth in PICs has lagged behind peer groups (Figure 1). In the 1970s, the PIC economies grew at a respectable rate of just below 4 percent per year, albeit still not

as fast as low-income countries (LICs) and other small states on average.[4] The 1980s was a slow-growth decade for PICs, but LICs and small states' performance was also weaker. The 1990s saw PIC growth rebound and nearly caught up with LICs', but this was followed by a sharp divergence during the 2000s. Although the acceleration of LICs contributed most to this divergence, it is also evident that PICs had the weakest growth in four decades, managing to grow at only one-third the rate of LICs.[5]

There have been considerable variations in economic growth across PICs (Figure 2). The two resource-rich economies in the region, PNG and Solomon Islands, riding on world commodity booms, had a dramatic change in fortune over the last decade,

Figure 1: Annual Average Real GDP Growth (In percent)

Source: IMF Database

Figure 2: PICs Annual Average Real GDP Growth (In percent)

Source: IMF Database and Staff Reports

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[4] The definition of LICs is based on the current IMF classification. It should be noted that, as pointed out by Winters and Lim (2010), LICs' growth performance tends to be understated as some countries that were LICs in the early years have moved out of the group because of their faster economic growth. The classification of small states is based on Commonwealth Secretariat and World Bank (2000), with population below 1.5 million except PNG. These countries are listed in Appendix II. ECCU includes Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines.

[5] Despite the food and fuel price shocks and the global financial crisis, average growth during 2007-10 is similar to that during 2001-06.

overperforming their non-resource rich peers after a long period of weak growth. In fact, PNG grew well above the regional average even in the 1990s. There have been changes in fortune in the opposite direction, too. Fiji, for instance, after outperforming most of its neighbors for most of the period, registered one of the slowest growth rates in the past decade. As we will discuss later, this has been largely a result of domestic developments. Appendix I provides a graphical view of long-term growth in a number of PICs.

Growth in PICs has been volatile, but on average, it has exhibited similar levels of volatility as other groups of developing countries (Figure 3). It is worth noting that growth volatility was high in the 1970s and 1980s for countries with available data. In the 1990s, volatility remained high for all groups except the ECCU. The 2000s witnessed noticeable declines in volatility for all groups except ECCU, which experienced its most volatile period in four decades. PICs had lower growth volatility (along with the slowest growth rate) in the 2000s. This is in sharp contrast with ECCU, where volatility increased while growth slowed.

Figure 3: Standard Deviation of GDP Growth

Source: IMF Database and calculations
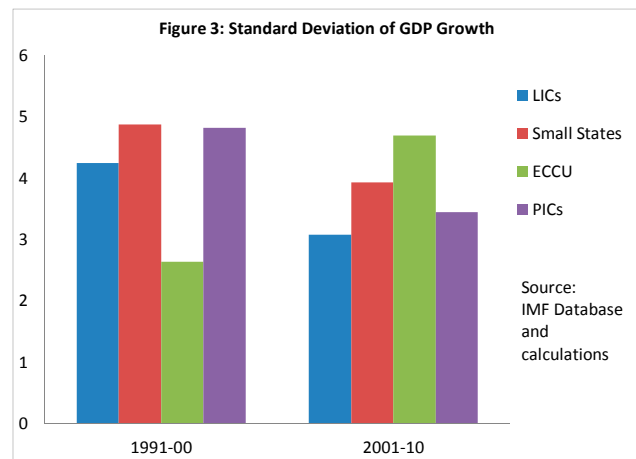
III.   GROWTH CONSTRAINTS IN SMALL STATES

So why have PICs tended to grow less rapidly than peer groups and why has growth slowed over the past decade? In this section, we focus on the first question and leave the discussion of the second to Section VI. In what follows, we first provide a review of the literature on growth determinants, focusing on salient constraints facing small states. This is then followed, in Sections IV and V, by an empirical examination of key growth determinants in PICs and other small states.

Research on the determinants of growth and volatility in PICs has been closely related to "special problems of small states" (Streeten, 1993).[6] Such special problems are inevitably

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[6] There is no consensus on the definition of small states—not only have various variables (e.g., population, GDP, and geographic area) been used as a criterion, but also various thresholds for the same variable. The

linked to country size and geographical location and issues that arise from these unique characteristics of small states, and PICs in particular. Small country size gives rise to not only diseconomies of scale if domestic market is relied upon as the main source of demand, but also difficulties with industrial clustering, a way in which modern manufacturing (e.g., electronics and toys) and service industries (e.g., financial and information technology) reduce production costs.[7] The geographical location of many small states, and of PICs in particular, makes them remote and/or insular from major international markets, raising the cost of transportation and communication. Coupled with the effect of country borders (including trade restrictions),[8] this means that small countries are less able to exploit economies of scale and hence suffer from lower productivity, if not lower growth of productivity.[9] Small states also face high unit cost in providing public goods because of

indivisibility of such goods (World Bank, 2010; Commonwealth Secretariat and World Bank, 2000).

Thus, theory suggests that PICs are particularly disadvantaged by their country size and location in terms of production costs and economic integration. Figure 4 shows that not only are many PICs small, but they also tend to be more remote than

Figure 4: GDP Weighted Distance (km)

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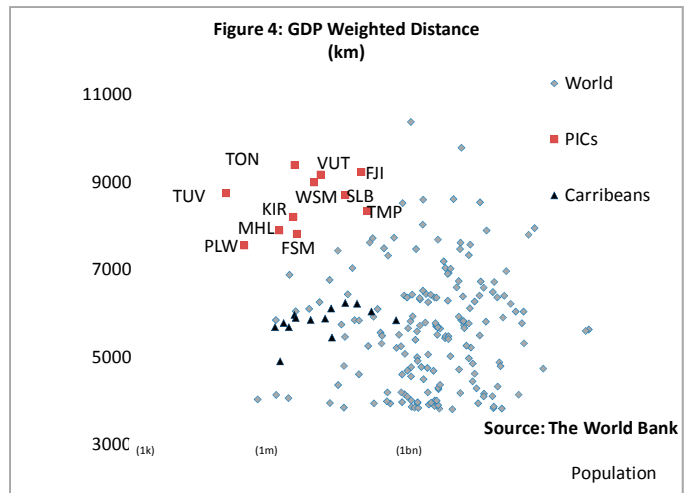
threshold for population, the most commonly used variable, has ranged from anywhere around one million to 15 million (see Armstrong and Read, 2003).

[7] Some potential advantages of being small have also been discussed in the literature. These include flexibility in adapting to changes in the external environment, more homogeneous population, size-induced greater openness, and lower chance of implementing costly import substitution. See Streeten (1993), Easterly and Kraay (2000), and Armstrong and Reed (1998; 2003).

[8] See McCallum (1995), Wei (1996), and Anderson, J., van Wincoop (2004) for the effect of international borders on trade. McCallum (1995) found that Canadian provinces trade up to 22 times more with each other than with U.S. states.

[9] Milner and Westaway (1993) explore the medium-term growth effects of country size through possible capital shallowing, restricted structural change, barriers to catching up, and limited domestic technological diffusion. The authors find some evidence of capital shallowing and greater barriers in technological diffusion.

most other small countries. Smallness may not be a disadvantage if a country is surrounded by large, prosperous countries (e.g., Luxembourg) that offer large markets without significant trade barriers. For PICs, their small size and location re-enforce their disadvantages: remoteness increases their cost of transportation, raising the cost of exporting and importing, which in turn also raise the cost of domestic production and exports;[10] at the same time, smallness tends to add further to transport costs, either because of weak competition (e.g., fewer airlines and shipping companies), higher infrastructure costs (e.g., fewer resources for building efficient ports), or small transport volumes (e.g., containers not fully utilized). Thus, while small can be beautiful, remoteness hardly is, as far as economic efficiency is concerned.

In contrast to the theory, empirical evidence on the effects of smallness and remoteness on income and economic growth is inconclusive. In an extensive survey, Armstrong and Read (2003) conclude that there is no evidence that small states grow more slowly despite *a priori* expectations. Furthermore, evidence is also weak on the negative impact of "islandness" on growth. This is, however, somewhat surprising given that the literature has demonstrated that landlocked countries—which face similar challenges to island countries in terms of isolation-induced transportation and communication costs—tend to grow more slowly than coastal countries (Gallup et al., 1998; Hausmann, 2001). If these conclusions are true, there must be some intrinsic characteristics of small states that enable them to offset their geography-related disadvantages.

Greater trade openness has been found to be one such key offsetting factor. Small states tend to have higher trade to GDP ratios than larger countries. Easterly and Kraay (2000) find that the benefits of this greater trade openness offset the adverse impact of greater output volatility in small states.[11] In the sample that Easterly and Kraay used, small states have a ratio of trade to GDP that is 54 percentage points higher than the average economy and the

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[10] Redding and Venables (2004) find that the geography of access to markets and sources of supply is an important determinant of income levels across countries. Their results indicate that halving a country's distance from all its trade partners increases its per capita income by around 25 percent. Similarly, using data on costs of doing business, Winters and Martins (2004) show that for both clothing and electronic assembly, micro-economies have cost inflation factors of 36 percent, and that for tourism the factor is 58 percent. The last is driven substantially by high costs for personal travel (and the high share of such travel in overall packages).

[11] Srinivasan (1986) argued that smallness is neither a necessary or sufficient condition for slow growth and development. Milner and Westaway (1993) find that there is no obvious link between medium-term growth performance and a range of attributes of country size.

effect of this greater openness is 2½ times larger than the negative effect of greater output volatility. The authors conclude that even if output volatility is one of the consequences of openness, small states' greater openness is still on balance a positive factor for small states' growth. Of course, greater volatility is not the only (or even the most important) disadvantage facing small states.

Because of small states' greater trade openness, their growth performance is more closely linked to the growth performance of their key trading partners. Countries that are located in a more dynamic and prosperous region are likely to grow faster than those in a stagnating region, and vice visa. Some empirical research find supporting evidence for this hypothesis (Armstrong and Read 2000). In a similar vein, Gibson and Nero (2006) found that growth in small states are heavily influenced by the growth of neighboring countries that are located within 35 degrees of latitude or longitude (a distance of approximately 3,900 kilometers at the equator).[12] Their results show that each percentage point increase in the average growth rate of this neighborhood raises the GDP growth rate of small states in the region by 0.54 percentage point. Looking at this type of growth linkages from a different angle, Bertram (2003) finds that the per capita GDP of small island economies and its growth through time, are explained to a large extent by the closeness of the political linkages tying each island to a corresponding metropolitan patron and the level of per capita GDP in the metropolitan patron economy. Estimates show that for each dollar increase in the per capita GDP in the patron economy, there is a 30-56 cent increase in the per capita GDP of island states.

IV. MODEL, DATA AND METHODOLOGIES

Model specification

The review above suggests that it is not clear how important geography-related disadvantages are in determining small island states' growth performance relative to common constraints facing all countries. In what follows, we take a more comprehensive approach to the analysis of growth determinants, using a cross-section dataset covering the period 1992-2008 for 45 small states (see Appendix II Table 1 for the country list). Our aim here is to test within this relatively homogenous group of small island states what differentiates the growth performance of PICs from their peers. Once growth determinants are identified, we evaluate

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[12] Gibson and Nero (2006) also find that long-run growth in small states is also adversely affected by output volatility and language diversity.

their relative magnitude of impact. This would allow us to assess potential payoffs from policy actions to influence these determinants. Our approach is to start with parsimonious specifications and move on to more comprehensive and sophisticated specifications.

The model employed in the current study is the growth-initial level model, which is also called the beta-convergence model. The development of the beta-convergence literature has reached a high level of sophistication, thanks to the efforts of Mankiw, Romer and Weil (1992), Barro and Sala-i-Martin (2004) and Islam (2003a, 2003b). The basic form of the growth-initial level equation can be expressed as follows:

$$(1) \quad gy_i = -(1-e^{-\lambda\tau})\ln(y_{i,0}) + (1-e^{-\lambda\tau}) \cdot \frac{\alpha}{1-\alpha} \cdot [\ln(s_i) - \ln(n_i + g + \delta)]$$
$$+ (1-e^{-\lambda\tau}) \cdot \ln A_{i,0} + g \cdot (t - e^{-\lambda\tau} \cdot 0) + \gamma \cdot X + \varepsilon_i$$

where *gy* is the average growth of per capita GDP over the period under study; the subscript denotes province i; $-(1-e^{-\lambda t})$ captures convergence effect, with $-(1-e^{-\lambda t}) < 0$ providing evidence that economies converge to their respective steady-state levels of income, i.e. beta-convergence, while $-(1-e^{-\lambda t}) > 0$ indicating beta-divergence. The rate of convergence, λ, can be restored from the estimated coefficient; y_0 is real per capita GDP in the initial year; *s* is the share of gross fixed capital formation in GDP; *n* is the growth rate of total population, *g* denotes technological progress, δ is physical capital depreciation rate, and X is a variable matrix which represents variables other than those related to beta-convergence in determining economic growth. In this study we set $g + \delta = 5\%$.[13] Furthermore, by making the restriction that the coefficients of $\ln(s)$ and $\ln(n + g + \delta)$ have identical magnitudes but different signs as in Equation (1), one is able to obtain the output share of physical capital, α. However, if this restriction is not supported by empirical analysis, as in the current study, the growth-convergence model should have the following expression:

$$(2) \quad gy_i = \beta_0 + \beta_1\ln(y_{i,0}) + \beta_2\ln(s_i) + \beta_3\ln(n_i + g + \delta) + \gamma \cdot X_i + \varepsilon_i$$

where $\beta_1 = -(1-e^{-\lambda t})$.

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[13] Most studies in the literature assume a same value of $g + \delta$ for all countries and the most frequently used value is 0.05. See, for example, Mankiw, Romer and Weil (1992), Islam (1995), Yao and Zhang (2001) and Chen (2012).

Data description

Our data are from the databases of the United Nations, the World Bank and the International Monetary Fund. All money values are in constant 2005 prices in US dollars. In general, 45 small countries are covered in the present study, but due to limitations on data availability for certain series such as aid and distance, some regressions cover 40 or 39 countries. Statistics of the relevant series are summarized in Appendix II Table A2. The following are used as relevant growth determinants while average real growth of per capita GDP over 1992-2008 (denoted by gy) as the dependent variable:

- GDP per capita in 1992, denoted by $\ln(y_0)$. It captures the convergence effect.

- Investment-to-GDP (%), denoted by ln(investment rate). Values of this variable are averaged over 1992-2008.

- Population growth together with the physical capital depreciation rate and cost of technological progress (%), denoted by $\ln(n + g + d)$. Values of this variable are averaged over 1992-2008.

- Foreign aid-to-GNI ratio (%), denoted by Aid/GNI. Because of data limitations, the most recent data (2007) was used. The validity of this proxy is supported by a strong linear correlation between the aid-to-GNI ratio in 2007 and the average aid-to-GNI ratio over different available years during the period 1992-2007.

- Political stability. This series is obtained from the World Bank's *Worldwide Governance Indicators (2011 Update)*. The data is averaged over available years over 1996-2008. We also tried other governance indicators from the same source but only the Political Stability indicator is found robust.

- Exports-to-GDP ratio (%), denoted by Exports/GDP. It measures export openness. We also tried imports-to-GDP and trade-to-GDP ratios, but found them less robust. Values of this variable are averaged over 1992-2008.

- Growth volatility, measured by standard deviation of GDP growth rates over the period under study. The volatility-growth nexus has been widely discussed in the literature. Some studies, such as Kormendi and Meguire (1985) and Grier and Tullock (1989), found volatility is positively associated with growth, while others, such as Ramey and Ramey (1995), Aizenman and Marion (1999) and Easterly and Kraay (2000), showed a negative relationship. However, as noted in the literature and our observations in Section V, the impact of volatility on growth is often linked to some other factors that directly

affect growth. For instance, volatility may arise from political instability and trade openness.

- Remoteness, measured by GDP-weighted distance to the capital cities of major overseas markets, is denoted by ln(distance). We tried several measures of remoteness such as distance to top three trading partners, distance to top three trading partners weighted by GDP, weighted distance to top three export markets/import sources/trading partners, average distance to other countries, and distance between producers and consumers within a country, and found only GDP weighted distance to capitals of major overseas markets helped effectively explain growth in the current study.

- A set of dummy variables to represent continents/regions and the country of Equatorial Guinea, with the latter capturing its exceptional growth with the exploration of oil resources. This set of dummy variables is found to be important in controlling for country heterogeneity and mitigating the heteroskedasticity problem. Apart from this set of dummies, we also tried dummy variables to represent oil producers, oil exporters, commodity exporters, and wealthy countries, but none was found significant across various regressions in the current study.

We also considered a number of other factors but found they are statistically insignificant. For example, we tested the importance of smallness as measured by population size. The insignificance of population size in the current study of small states, together with the significance of the same indicator in the literature (see, e.g. Easterly and Kraay 2000), suggests that the impact of smallness on growth may not be linear. Given the relatively homogenous sample we have used, this is not surprising. Other insignificant factors we identified include education, inflation, government expenditure, imports, size of agriculture and manufacturing, urban population ratio, arable land ratio, terms of trade, disaster indicators, trade weighted external demand, and external demand measured by top three export destinations' GDP growth. Of course, the performance of these variables could be limited by data quality.

Estimation Methodologies

The analysis in this paper is based on cross-sectional data on up to 45 countries. Such a relatively small sample can yield instable results if large heterogeneity exists among observations. However, it is not the case in this study, as our regression results across various specifications are quite consistent, a benefit of the homogeneity of the sample. This benefit is also evident in the consistently high adjusted R-squared values across regressions and the

consistency between cross-sectional analysis and panel-data analysis that we have carried out, with heterogeneity of countries controlled for by country-fixed effects.[14]

Another issue worth noting here is causality between dependent and explanatory variables. For instance, the causality between investment and growth is believed to be bidirectional. See, for example, Feeny (2005). Endogeneity of aid also receives considerable attention in the aid-growth literature (e.g., Mosley (1980) and Ali and Isse (2005)). Similarly, bidirectional causation between volatility and growth is also widely discussed in the literature. See, for example, Easterly and Kraay (2000) and Malik and Temple (2009). Given this, addressing the endogeneity problem is important in our analysis, as least squares estimates in the presence of endogeneity are biased and inconsistent. Instrumental variables (IVs) estimators should be applied instead. The Sargan test and test Hausman are employed in the current study to detect over-identification of external instruments and endogeneity, respectively. Based on test statistics, we found investment and aid do not pose an endogeneity problem to estimation while growth volatility does.[15,16,17] Therefore, the two-stage least squares estimator

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[14] In our panel data exercise, the whole sample period 1992-2008 is divided into four time spans, namely 1992-1996, 1996-2000, 2000-2004, and 2004-2008. Panel data analysis results are not reported here to conserve space, but are available upon request.

[15] To test investment endogeneity, manufacturing and mining output relative to GDP and agricultural output relative to GDP were used as external instruments for investment-to-GDP. The Sargan test statistic is 0.811 with a p-value of 0.617, therefore the null hypothesis that external instruments are valid is not rejected. However, the Hausman test statistic of 1.618 with p-value of 0.203 provides strong evidence that the null hypothesis of exogeneity is not rejected.

[16] For Aid-to-GDP endogeneity test, we considered external instruments such as the education index, deaths caused by natural disasters, government expenditure/GDP, and primary industry output/GDP. Only government expenditure/GDP and primary industry output/GDP are found to be valid external instruments based on the Wald parameter test (F-statistic = 13.45). Over-identification of parameters is confirmed by a Sargan chi-squared statistic of 0.453 with p-value of 0.5011. However the Durbin-Wu-Hausman test (with a chi-squared statistic of 0.46481 and p-value of 0.495) provides no evidence that Aid-to-GNI in the analysis is endogenous. Nonetheless, the two-stage least squares estimator was applied to address any potential endogeneity, but the results obtained are similar to those using the ordinary least squares estimator.

[17] To test for endogeneity of growth volatility, we used political stability and exports-to-GDP as external instruments. The Sargan test statistic of 0.111 with p-value of 0.739 strongly indicates that external instruments are valid, and the Hausman test statistic of 9.316 with p-value of 0.002 provides strong evidence that volatility is endogenous.

is employed to estimate those regressions in which growth volatility is included as a regressor; otherwise least squares estimator is applied.

The estimation of the specified model follows a simple-to-general strategy, namely, we first test for the neoclassical growth theory by assessing effects of $\ln(y_0)$, $\ln(s)$ and $\ln(n + g + d)$ jointly, and then add and test for additional control factors one at a time.[18] This approach help us identify relevant determinants while avoiding biased estimates caused by omitted relevant variables and minimizing the loss in the efficiency of estimates caused by including irrelevant variables.

V. DETERMINANTS OF GROWTH IN SMALL STATES

Regression results suggest that geography has a large influence over economic growth in PICs (Table 1).[19] After controlling for a number of variables that are found to be statistically significant as determinants of growth (see below), PICs are shown to suffer a distance-related disadvantage in per capita GDP growth of about 1½ percentage points compared with an average non-Pacific small state.[20] To put this in perspective, PICs' annual average per capita GDP growth over the period 1992-2008 was a little over 0.7 percent. Without the geographical disadvantage, PICs could have grown more than three times as fast as they actually managed to achieve during the period.

However, as important as it is, geography is not the only factor that has contributed to the slower growth of the PIC economies compared to other small states. Growth in small states is

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[18] We also tried a specification with human capital as a growth determinant. We used various proxies for human capital, such as the education index, the human development index (both from the United Nations database) and the secondary school enrolment rate, but none of them was found statistically important in explaining growth experience in small states. Data limitation in terms of time coverage may have affected the results.

[19] Discussions hereafter are based on regressions 2 and 3 in Table 1.

[20] Small states in Africa also suffer a geography-related disadvantage, but PICs are subject to by far the largest disadvantage among small states. We run two models, one using trade-weighted distance and the other regional dummies to capture the impact of geography on growth. Not surprisingly, we found the two variables are correlated, and including one in the regression would render the other insignificant. Moreover, the estimated impact of the two sets of variables on PIC growth is similar, confirming that distance is the main source of growth disadvantage. Distance is measured as GDP-weighted physical distance to the capital cities of major markets.

Table 1. Regressions on per capita GDP Growth of Small Island Countries

ESTIMATION METHOD	(1) OLS	(2) OLS	(3) OLS	(4) 2SLS
VARIABLE	Coef. [t-stat]	Coef. [t-stat]	Coef. [t-stat]	Coef. [t-stat]
Pacific	-3.13 [-3.33]	-1.90 [-2.11]		-1.77 [-2.01]
Constant	7.00 [1.56]	15.68 [3.47]	35.09 [2.90]	15.41 [3.34]
$\ln(y_0)$	-0.13 [-0.58]	-1.30 [-3.80]	-1.36 [-4.77]	-0.87 [-3.36]
$\ln$(invest. rate)	1.23 [2.11]	1.05 [1.78]	1.08 [2.20]	1.72 [3.20]
$\ln(n + g + d)$	-3.21 [-2.04]	-4.06 [-2.61]	-3.94 [-3.32]	-4.62 [-2.84]
Aid/GNI		-0.05 [-2.09]	-0.06 [-2.44]	-0.07 [-2.83]
Political stability		1.25 [2.50]	1.41 [3.19]	
Exports/GDP		0.03 [2.07]	0.04 [2.79]	
Growth volatility				-0.36 [-2.69]
$\ln$(distance)			-2.31 [-1.91]	
Sample size	45	40	39	40
Adjusted/centered R^2	0.8161	0.8786	0.9068	0.8818
Variance inflation factor (mean VIF)	2.33	2.33	1.99	-
Breusch-Pagan (p-value)	0.3634	0.4534	0.7104	-
Sargan statistic	-	-	-	0.7387

Notes:
1. y_0, representing initial per capita income in 1992, measures convergence effect; Saving rate is gross fixed capital formation out of GDP; $n + g + d$ is population growth, g is technological progress rate and d is capital depreciation rate. $g + d = 0.05$ is adopted in this study; Political stability is one of governance indicators provided by the World Bank; Growth volatility is measured by standard deviation of per capita GDP growth rate; and Distance is weighted distance to major overseas markets.
2. Dummy variables are included to represent Equatorial Guinea and continents such as Africa, America, Europe and Pacific, which help to control for the heteroskedasticity problem.
3. Regressions 1~3 employ the ordinary least squares estimator while Regression 4 employs the two-stage least squares estimator. Growth volatility is found to be endogenous in the current study, and political stability and exports/GDP are used as instrument variables for growth volatility whose validity as efficient instruments is confirmed by the Sargan statistic. More description on endogeneity test is in footnote 15.
4. As noted in the regressions, impacts of political stability and exports-to-GDP not only directly work on growth but also indirectly via affecting growth volatility.
5. Variance inflation factor (mean VIF) is used to detect the collinearity of the regressors with the constant. A mean VIF of less than 10 can be taken as no evidence of collinearity problem. Breusch-Pagan test is employed to test for heteroskedasticity. A p-value greater than a preferred significance level can be taken as no evidence of heteroskedasticity.
6. All regressors are significant at least at the 10% level, with most of them significant at either 1% or 5% level.

 influenced by a number of other variables—initial income levels, investment, population growth, aid, export openness, growth volatility, and political stability, all of which were found to be statistically significant. When combined, these variables collectively lower the per capital GDP growth in PICs by about another percentage point, compared with an average small states, with some variables making positive contributions and others negative. To start with, PICs' initial income works to their advantage as PICs were on average poorer than other small states in the early 1990s, the time our initial income calculations are based upon. Based on the convergence effect found in the regressions, this lower initial income has allowed PICs to grow about ½ percentage point faster than an average non-Pacific small state

Lower investment (as percent of GDP) explains a part of the slower growth in PICs. Over the period 1992-2008, investment in PICs averaged 22½ percent of GDP, about 6 percentage points lower than the average of all small states. Had PICs been able to achieve the average investment rate of non-Pacific small states, their real per capita GDP growth would have been about ¼ percentage point higher. Given the data limitation, we were not able to disaggregate the investment data into public and private components or by economic sector.[21] Detailed analysis is needed to identify at the country level what type of investment would be most productive, but results here suggests that PICs do have a catch-up to do when benchmarked against other small states. Moreover, there are large variations in the investment rate among PICs. For instance, Fiji's investment rate is 14 percent of GDP while that of Vanuatu is 20 percent. This translates to a difference in the growth rate of ¼ percentage point.

Greater export-orientation makes a strong positive contribution to growth among small states. On average each 10 percentage point increase in the exports-to-GDP ratio raises per capita GDP growth by about 0.3 percentage point. Since the exports-to-GDP ratio in PICs is 24 percentage points lower than the average of non-Pacific small states, this implies that PICs could have grown by 0.6 percentage point faster had they exported as much as other small states (in percent of GDP). We find that greater imports as percent of GDP have no statistically significant impact on growth. This suggests that unlike evidence found for some other countries, imports have not been associated with technological transfers that benefit growth in small states. This in turn may reflect the fact that the imports in small states more

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[21] We did include secondary education in the regression in an attempt to capture the effect of human capital on growth. However, the results are statistically insignificant.

often consist of consumer goods, rather than intermediate inputs or capital goods that embody newer technologies and help improve local productivity. Moreover, imports in small states are more likely to be linked to aid-funded projects that tend to have weaker linkages with the local economy. Similarly, we also find no evidence that openness measured by the ratio of trade turnover (exports plus imports) to GDP has any positive impact on growth.

Part of the benefits from greater export openness is offset by increased output volatility arising from larger exports (as percent of GDP). Estimates show that each 10 percentage point change in export openness is associated with 0.2 percentage point change in the standard deviation of GDP growth.[22] Given this, less than a quarter of the growth benefits from greater export openness is nullified by the associated increase in output volatility, leaving PICs worse off by about 0.5 percentage point from their lower openness compared with other small states.

Aid is found to be associated with slower GDP growth. In almost all regressions we have tested, the relationship between aid and growth is negative. For each 10 percentage point increase in aid as percent of GDP, growth is lower by 0.6 percentage point. Our preliminary tests show that there is no reverse causality, that is, slower growth does not lead to more aid; it is more aid that leads to slower growth. It is not clear how aid might slow growth in small states, though the most commonly cited mechanism is the Dutch disease effect—a phenomenon of weak export competitiveness resulting from real exchange rate appreciation caused by capital inflows, such as aid. Having said that, it must be noted that the negative relationship found between aid and growth should not be interpreted as aid lowering economic welfare. In fact, much aid is often aimed at reducing poverty rather than increasing economic growth.[23] Unfortunately, we are unable to disaggregate aid into different categories in this analysis, so the estimated impact here applies to total aid, rather than part of the aid that is likely to enhance growth, such as aid used for improving infrastructure and increasing investment in other productive sectors. Moreover, if aid helps improve living standards in

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[22] This result is illustrative only. Our estimates are significant only at 83 percent confidence level, and the sample size is small (28 observations). However, the result is consistent with that reported in Easterly and Kraay (2000).

[23] The relationship between aid and growth is hotly contested subject in the Pacific, as is globally. See Bowman and Chand (2008), Rao, Sharma and Sing (2008), Pavlov and Sugden (2006), and Hughes (2003).

terms of education and health, it could help raise growth in the long run that may not have been captured in this analysis.

Political stability is an important source of faster growth. Measured by the World Bank Political Stability index, PICs score more favorably on political stability than other small states. This gives PICs, on average, an advantage of 0.3 percentage point in growth over other small states. It should be noted, however, that political stability varies substantially among PICs themselves. Other things being equal, the highest-scoring country in the region has a growth advantage of more than one percentage point over the lowest-scoring country.

To sum up the results, PICs have relatively low performance in export openness and investment, but do better than other small states in maintaining political stability. On balance, these policy-related factors, together with geography-related disadvantage, have led to growth rates that are much lower than in other small states. Figure 5 shows a rough decomposition of the impact of the various determinants on PICs' growth, benchmarked against the average growth rate of non-Pacific small states. The first bar from the left depicts the per capita GDP growth rate of non-

Figure 5: Factors Affecting Pacific Islands Growth (In percent)
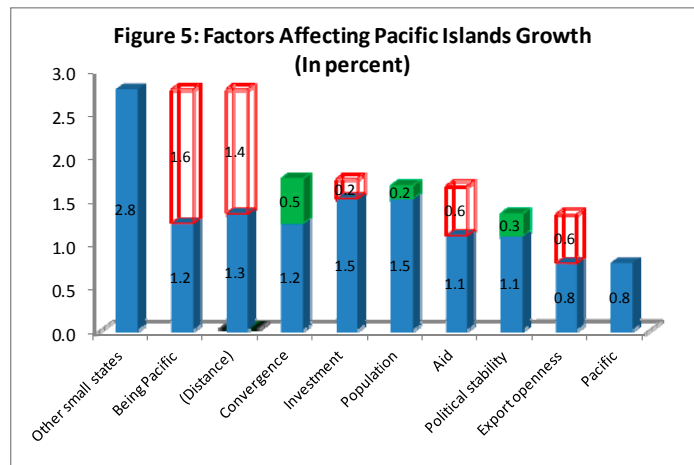
Pacific small states during 1992-2008. Each of the bars to the right shows, cumulatively, the impact of a growth determinant, with red hollow segments showing negative impact (blue segments showing the remaining growth rate after the negative impact), and solid green segments representing positive impact.[24] The blue bar in the far right shows the actual growth rate in PICs during the period. It is clear from the graph that lower export openness, aid and investment, along with PICs' geographical disadvantage, are the main contributors to their lower growth compared with other small states.

The results presented above should be interpreted with great caution. Data quality is always an issue in such exercises, and this is especially true for data on small states. While the

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[24] The third bar shows the results when using distance to capture the effect of geography, instead of regional dummies, shown in the second bar.

results are generally consistent across model specifications, they are subject to data limitations and should be further tested for robustness as data and other information improve. Perhaps even more important, the interpretation of the results should be guided by economic conditions pertaining to the countries in question. For instance, while we found that greater export openness is good for growth, it may not be equally feasible for all PICs to increase goods or non-factor services exports, particularly for micro-states which have few resources to produce such exports. Similarly, while low investment is generally a constraint on growth in PICs, countries need to identify what impediments investors might be facing and what projects might bring highest social returns.[25] Moreover, any scaling up of investment should also take into account debt sustainability if it is financed by borrowing. Capacity constraints at any particular time may also affect the effectiveness of investment.

VI.   WHY HAS PIC GROWTH SLOWED?

The above analysis provides a broad explanation for the relatively slow growth in PICs over the long run, but it sheds little light on why growth has slowed in many PICs over the past decade. In this section, we use the framework established in the previous section to explore possible explanations of the growth slowdown. We begin this exercise by dividing the sample period (1992-2008) into two sub-periods (1992-2000 and 2001-08) to gauge the extent to which the determinants identified earlier can explain the growth slowdown in the second period (2001-08). Statistical tests suggest that there were no significant structural breaks in growth for the entire sample of small states. Given this, the same set of regression

coefficients from the previous section can be used to predict growth rates based on the level of the determinants in the two sub-periods.

It appears that a decline in the exports-to-GDP ratio is a major contributor to the growth slowdown over the past decade. Investment increased slightly,


Figure 6: Goods and Services Exports
(In percent of GDP)

Source: IMF Database

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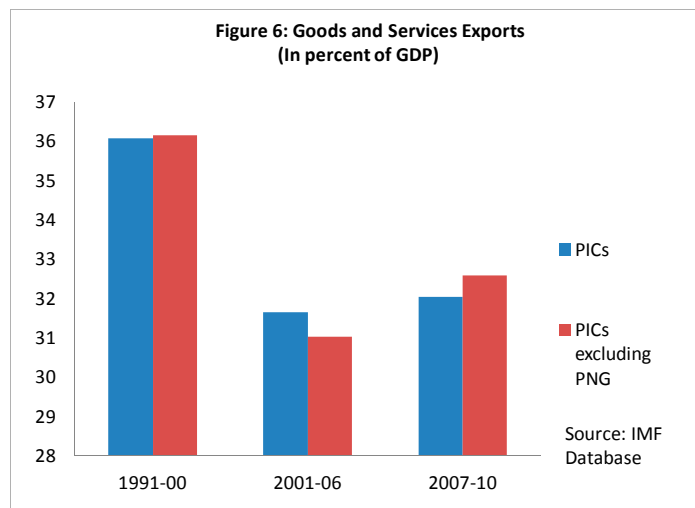
[25] A growth diagnosis approach could be employed in such analysis. See Duncan and Nakagawa (2006) for growth diagnosis for six Pacific island countries.

which should have helped raise growth, as should lower output volatility. The positive effects of these developments should add up to over half percentage point. On the other hand, the average export openness ratio fell by as much as 4½ percentage points in the 2000s from its 1990s level (Figure 6).[26] While there are undoubtedly other factors (including country-specific ones) that have not been included in the model but have contributed to the slower growth in the 2000s, the decline in export openness, though far from fully explaining the growth slowdown, points to a weakness in an area that is key to mitigating the growth disadvantage of small states—integration with the global economy.

While the decline in trade openness over the past decade may partly reflect external shocks, it may also indicate weakening competitiveness in some cases. In several PICs, growth began to decelerate well before the hikes of world food and fuel prices in 2007-08. At least seven out of the 11 countries had slower growth in 2001-06 than in 1991-2000. For the 11 PICs as a group, average growth in 2001-06 was a little over half the rate of the 1990s and was similar to the average growth of 2007-10, a period full of adverse shocks. In some cases, external shocks seem to have had lasting impact on productive capacity and weakened growth fundamentals, as the experience of Samoa has shown following the devastating 2009 Tsunami and the global financial crisis (Box 1). Countries in such circumstances may need to re-assess their competitiveness position and adapt their strategies to regain growth momentum.

Real exchange rate appreciation may have played an important part in weakening competitiveness in a number of countries. In contrast to the 1990s, when only Solomon Islands experienced an appreciation of the real effective exchange rate (REER), over the past decade the REER has appreciated for all six countries that have their own currencies except Fiji
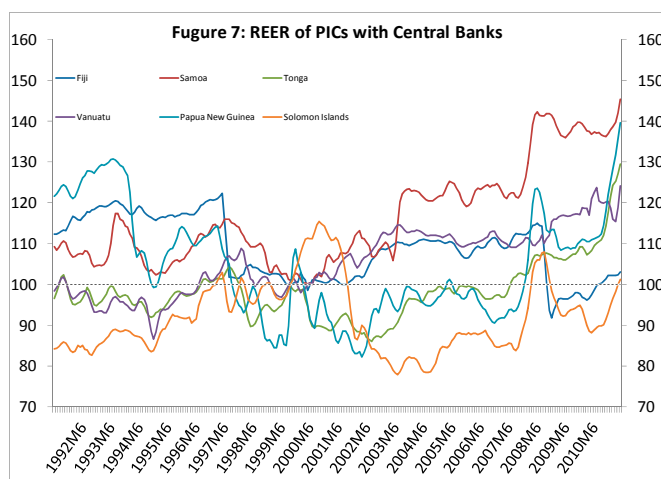
Fugure 7: REER of PICs with Central Banks

Box 1. Samoa: Managing Shocks and Regaining Growth Momentum

The Samoan economy had been growing strongly until the mid 2000s when it seems to have lost momentum. Well coordinated reforms in the mid-1990s and sound macroeconomic policies delivered an annual average GDP growth rate of 5 percent during this period. Investment in the lead up to the 2007 Pacific Games provided another boost before a series of shocks hit the economy—the food and fuel price hikes, a devastating tsunami, and the global financial crisis. Economic growth has since slowed significantly despite a large boost to government expenditure in FY2009/10 - 2011/2012, with an average overall fiscal deficit of 7.3 percent of GDP. Real GDP growth between 2006/07 to 2010/11 averaged only 0.3 percent, the slowest since the mid 1960s (see graph below).

Source: IMF Database and Staff Calculations
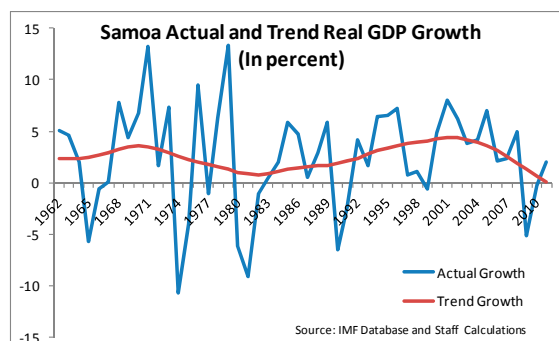
The large infrastructure rebuilding and reconstruction effort of the government following the 2009 tsunami was well supported by development partners through grants and concessional loans. However, Samoa's public debt has continued to rise, reaching well over 50 percent of GDP at the end of FY 2010/11. Meanwhile, tourism and remittances, two pillars of the Samoan economy, have recovered only slowly, and the Yazaki automotive component plant has been declining since the global financial crisis erupted in 2008. Moreover, agriculture has been stagnating in recent years.

Samoa now faces a difficult path to wind down its fiscal deficits while the private sector has not picked up the slack. The government is committed to bringing down public debt to a more sustainable level over the medium term to maintain hard won macroeconomic stability. While the fiscal consolidation is essential for long-term sustainability, it may add further headwinds to an already weak recovery. Given the considerable real exchange rate appreciation over the recent years and weak global demand, great efforts would be needed to strengthen competitiveness and revitalize private sector-led growth.

Samoa's recent experience highlights the vulnerability of a small island economy's competitiveness to exogenous shocks. Competitiveness can be undermined quickly by such shocks and it would take coordinated efforts to regain it. A re-assessment of the economy's underlying strength and growth potential may be needed, and this would help establish a macroeconomic framework to regain competiveness and to maintain macroeconomic stability over the medium term. Structural reform needs to progress further to provide a more favorable environment for the private sector to take a lead role in economic development. Samoa has a strong track record of reform and the government's continued commitment to keeping this record bodes well for future progress.

and Solomon Islands (Figure 7).[27] Even in these two countries, there were periods of rapid appreciation prior to the sharp devaluations in 2009. Except PNG which has a floating exchange rate regime, all other five countries are pegged to a basket that includes the Australian and US dollars, among other key trading partner currencies. While domestic prices have been rising more rapidly than those in trading partners, there have been limited movements in nominal effective exchange rates over time, leading to considerable real appreciation in some cases, such as Fiji, Tonga, and Vanuatu, even before the hikes of global food and fuel prices. In the case of PNG and (to a lesser extent) Solomon Islands, the appreciation since 2008 has also been driven by the commodity booms, which have boosted export earnings and foreign direct investment inflows. In the five countries that do not have their own currencies, those that use the Australian dollar (Kiribati and Tuvalu) have experienced sharp real appreciation while those that use the US dollar (Micronesia, Palau, and Marshall Islands) have not seen any real appreciation or even experienced depreciation (Figure 8). It should be noted that

Figure 8: REER of PICs without Central Banks
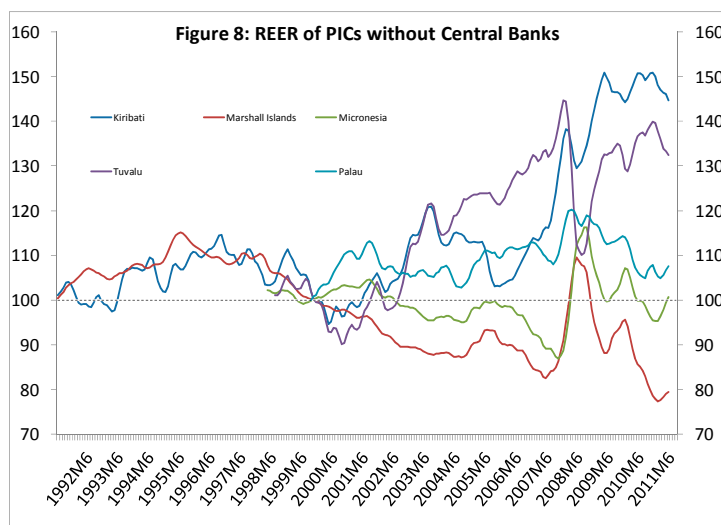
the exchange rate appreciation has not in general led to declines in foreign reserves. In fact, in most cases, reserves as measured by import coverage have risen since the global financial crisis. In some cases, this partly reflects weak import demand resulting from slow economic activity, but also generous donor support. As economic recovery strengthens over time, reserves may stop cumulating or even fall.

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[27] These six countries are Fiji, PNG, Samoa, Tonga, Solomon Islands, and Vanuatu.

The evolution of the current account is indicative of the change in external competitiveness over time. While the 2007-08 food and fuel price increases and global financial crisis have certainly contributed to this development in recent years, the deterioration started before these shocks (Figure 9). The trade account has also deteriorated, albeit by much less (Figure 10). It is worth noting, however, that the North Pacific states (FSM, RMI, and Palau) saw an improvement in the trade balance in the 2000s and countries that had REER appreciation experienced larger increases in the trade deficit than other countries. Again in the case of PNG, it should be noted that the deterioration of the current account also reflects the investment boom associated with the LNG project. In the case of Samoa, it was largely due to increases in imports as a result of post-tsunami reconstruction, although the strong Tala may also

Figure 9: Current Account Deficit
(In percent of GDP)

PICs
PICs excluding PNG
PICs excluding PNG and SI

Source:
IMF Database

Figure 10: Goods and Services Deficit
(In percent of GDP)

PICs   PICs excluding PNG   PICs excluding PNG and SI

Source: IMF Database

have helped boost imports in general. It is worth noting that the increase in the trade deficit has occurred despite the rapid growth of tourism exports over the past decade in some countries—Fiji, Palau, Samoa, and Vanuatu.

Given the real exchange rate appreciation and deteriorating export performance in many PICs, it is tempting to link the weakening competitiveness to the aid-induced Dutch disease effect referred to earlier in the econometric analysis. However, it should be noted that PICs' competitiveness may have also been affected by the changing external trade environment. As part of African, Caribbean, and Pacific (ACP) group, PICs have benefitted from non-reciprocal trade preferences under the successive Lomé Conventions (first signed in 1975) and subsequently the Cotonou Agreement (signed in 2000). Fiji's sugar exports, at higher
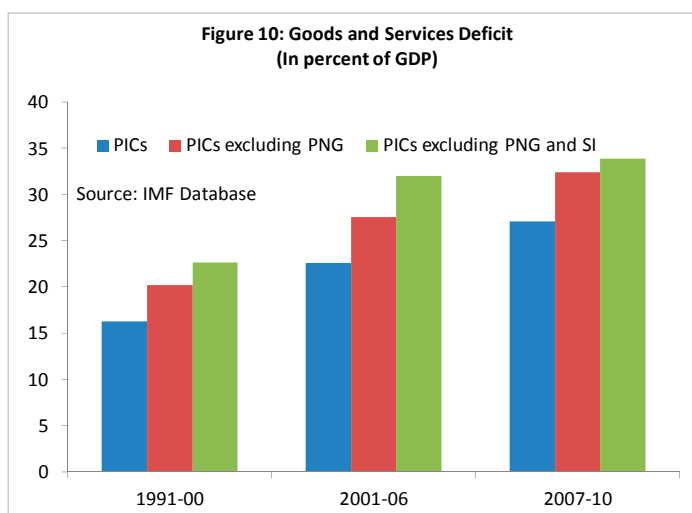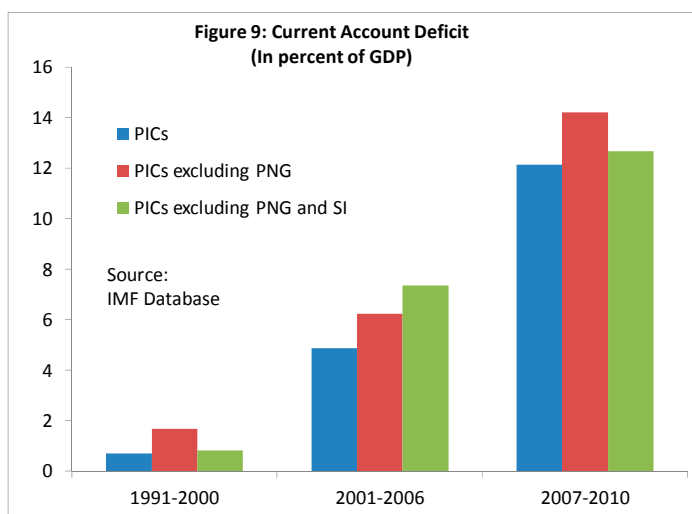
than world prices, are one example of such benefits. Trade preferences under the Cotonou Agreement have been eroded or are being phased out, reducing PICs' export competitiveness. Closer to home, non-reciprocal trade preferences offered by Australia and New Zealand under the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA, signed in 1981) are also being eroded as the two countries liberalize their trade over time. Under SPARTECA, for example, Fiji was able to export large volumes of garments to Australia and New Zealand, but as the preference margins have shrunk— especially when restrictions under the Agreement on Textiles and Clothing were phased out in 2005, so have Fiji's exports.[28] Negotiations on a Pacific Agreement on Closer Economic Relations Plus (PACER-Plus) to achieve the long-term goal of a 'single regional market' among Pacific Islands Forum members have moved slowly.[29] In recent years, PICs have also missed out on proliferating regional trade arrangements in the Asia-Pacific. Only Papua New Guinea is a member of APEC, and no PICs are members of any other major regional groupings or regional trade arrangements in Asia.

The evolution of PICs' trade patterns in recent years may have reflected these developments in the trade policy environment. Like all other groups of developing countries, PICs' traditional markets—the European Union and North America—have become less dominant.[30] The developments in the Australian and New Zealand markets, however, are different between the resource-rich and non-resource-rich PICs. The Australian and New Zealand Markets have become more important for PNG and Solomon Islands over time, while their role for other PICs has fallen sharply. In the non-traditional markets, the two groups of PICs have also gone in different directions. While PNG and Solomon Islands have shifted to China from other Asian countries, the other PICs have moved in the opposite direction, reflecting the growing importance of Southeast Asian markets over time. Non-resource rich PICs are the only group of countries that have seen less of their exports going to China over time. Taking Asia as a whole, these PICs have diversified their exports to Asia despite their inability to penetrate the fast-growing Chinese market. Lack of mineral resources and supply constraints on other commodities are probably the key reasons.

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[28] According to Wikipedia, in 1997 the textiles, clothing and footwear (TCF) industry accounted for 26 percent of Fiji's total domestic exports; it contributed to some 3.5 percent of GDP and provided employment for about 18,000 people that accounted for 16 percent of those in total paid employment.

[29] Negotiations on PACER-Plus was triggered under PACER in 2007.

[30] Data are available only for Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu.

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Figure 11: Export Market Shares for Comparative Country Groups

1991-2000	2001-2010

PNG & Solomon Islands (1991-2000): 1, 17, 36, 4, 42

PNG & Solomon Islands (2001-2010): 1, 15, 44, 11, 29

Other PICs (1991-2000): 40, 35, 1, 15, 9

Other PICs (2001-2010): 32, 23, 0, 23, 22

Small States (1991-2000): 42, 1, 3, 28, 26

Small States (2001-2010): 33, 1, 10, 27, 28

Low Income Countries (1991-2000): 52, 2, 2, 13, 31

Low Income Countries (2001-2010): 45, 2, 8, 13, 32

Sub-Saharan Africa (1991-2000): 62, 0, 2, 10, 26

Sub-Saharan Africa (2001-2010): 50, 1, 9, 11, 28

Legend: N America + EU, Aus & NZ, China, Rest of Asia, Rest of the World

Source: IMF Direction of Trade Statistics

Without taking the advantage of Asia markets, it is not surprising that overall PIC exports have grown considerably more slowly over the past decade than other groups of small states and low-income countries (Figure 12, first chart). It should be noted, however, that PICs did quite well in the 1990s, over-performing all other groups. During the next decade, however, while PICs broadly maintained their growth rates, other groups of countries surged ahead—exports from small states and SSA grew more than three times as fast as PICs, and low-income countries grew more than twice as fast. A key driver of the strong export growth in small states, LICs and Sub-Saharan Africa has been Asian markets, especially the Chinese market, as shown by the extraordinarily high growth rates in Figure 12 and the drastic increase in the share of the Chinese market shown in Figure 11.

Figure 12: Export Markets for Comparative Country Groups
(Real annual growth rate, in percent)
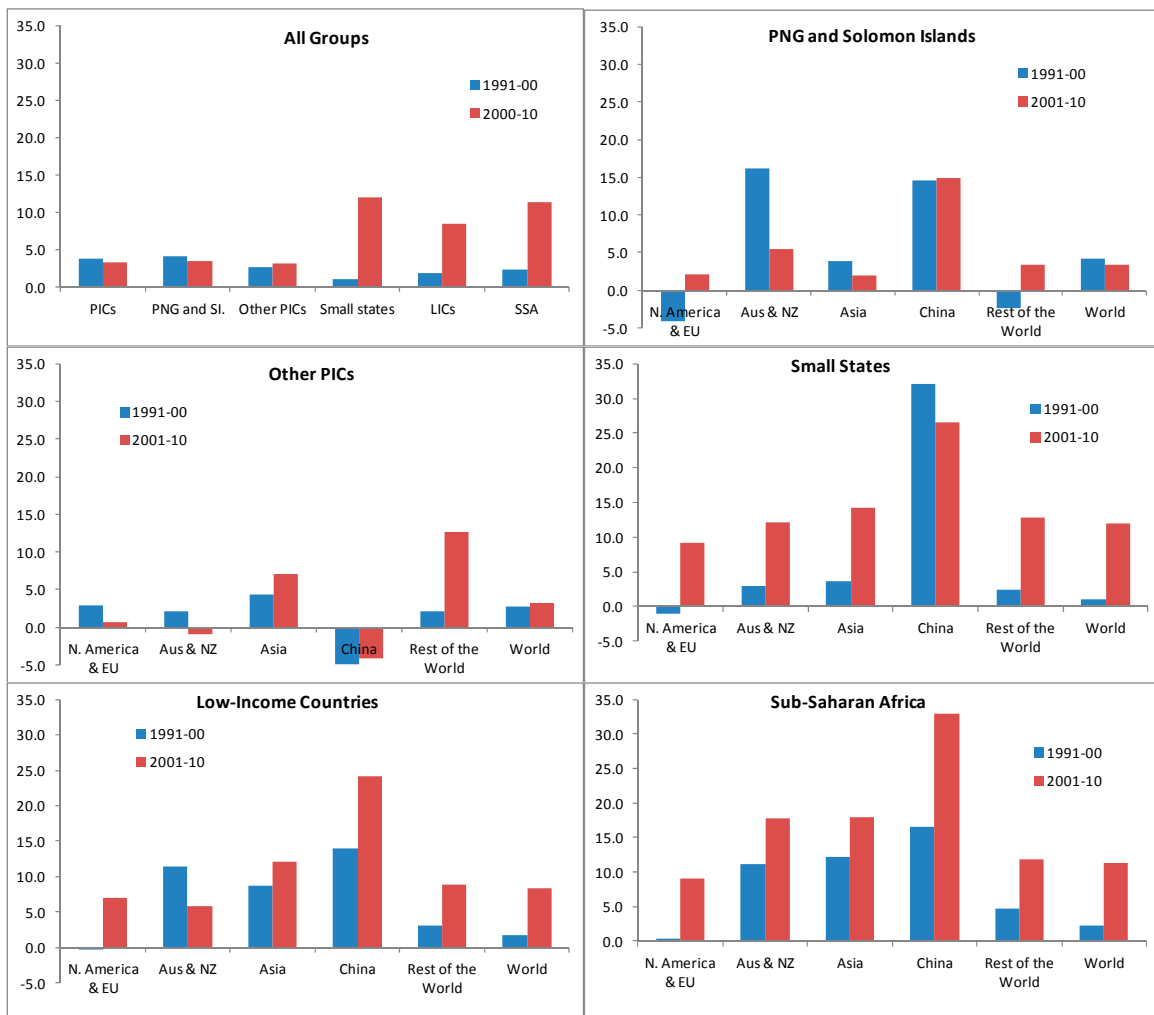
Box 2. Why Tourism Recovery Varies so Much across PICs

Recent experience with the recovery of tourism in PICs shows the importance of linking to Asian markets and the role of economic policy in determining tourism growth. Being much closer to Asia, Palau has benefitted immensely from the region. Taiwan (Province of China) and Japan account for some two-thirds of Palau's total tourist arrivals in recent years, and tourists from these two and other Asian sources have increased rapidly, helped by more charter flights from Asia. In contrast, all other four Pacific island countries have most of their tourist arrivals coming from Australia and New Zealand, which together account for two-thirds to three-quarters of total arrivals. Despite having a similar external environment, namely relatively strong growth of the Australian and New Zealand economies, Fiji's tourism has grown strongly while that of Samoa, Tonga, and Vanuatu has been slow or stagnating.
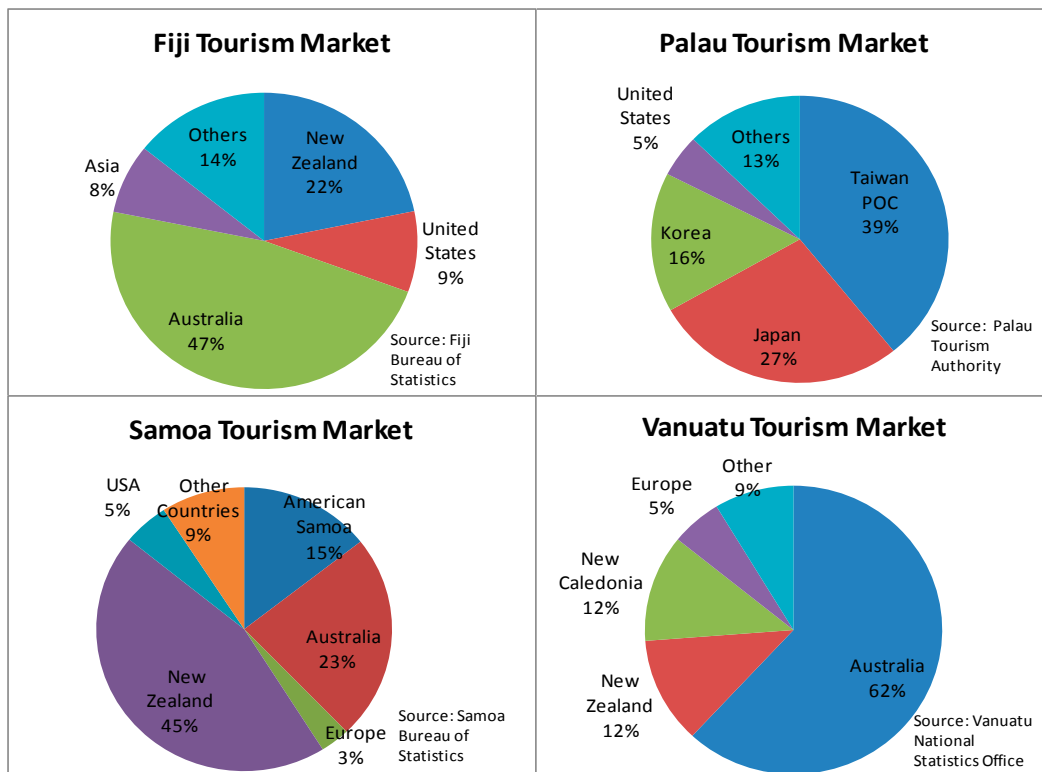

As with merchandise trade, exchange rate policy seems to have played an important part in explaining the varying performances. Palau uses the US dollar as its legal tender, and the dollar's weakness relative to Asian currencies has helped Palau's competitiveness. In contrast, all other four countries have pegged their currency to a basket that includes the strong Australian dollar. This has led to appreciation of their currencies against the US dollar, except Fiji, which devalued its currency by 20 percent against the US dollar in April 2009. The increased competitiveness from this devaluation helped boost Fiji's tourist arrivals by 17 percent in 2010.

There may be substitution among PICs as tourist destinations. This means that if every PIC devalues its currency, the region as a whole may not attract more tourists. However, given the region's relatively small market share in total Australian and New Zealand tourists, this substitution effect could be easily overstated. In any case, such effect should be limited among Asian tourists.

To fully understand the export performance of PICs, one also needs to take into account service exports, especially tourism. Among the 11 PICs covered in this paper, five (Fiji, Palau, Samoa, Tonga, and Vanuatu) have significant tourism exports: tourist earnings accounting for somewhere between 10 percent (Tonga) to 70 percent (Palau) of GDP and serving as an important source of economic growth in all five countries.[31] Growth as

measured by tourist arrivals has varied considerably among the five countries (Figure 13). As with merchandise exports, North America, Europe, Australia and New Zealand are traditional markets and these market still dominate in all five PICs except Palau, which has diversified into Asian markets in recent years. As Box 3 illustrates, both economic policy and geography played an important role in the recent recovery of tourism in these five countries.

Figure 13: PICs Annual Visitor Arrivals (In thousands)
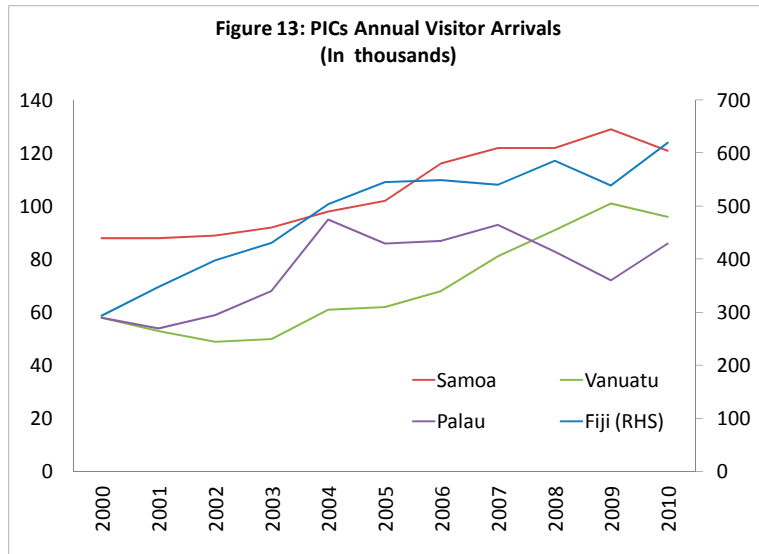
Evolution in the cost of international transportation in recent years may have worked to the disadvantage of PICs in recent years. It is commonly assumed that advances in transport technology should have reduced disadvantages facing more remote countries. Indeed, the introduction of jet engines in the late 1950s and containerized shipping in the 1960s have substantially increased the efficiency of both air and ocean transportation over the past few decades. According to Hummels (2007), however, technological advances in ocean shipping have been largely trumped by fuel price increases, leaving ocean transport costs (as percent of the values of shipped goods) in the early 2000s as they were in the 1950s.[32] Moreover, there have been rapid increases in transportation cost over the past decade, especially for air

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[31] Using a panel regression, Thacker (2011) finds a significant positive association between tourism and growth. A 10 percent increase in tourist arrivals per capita raises economic growth by about 0.2 percent.

[32] Note that the weight-based measures tend to overstate the decline in transport cost because the composition of shipped goods tends to shift toward lighter, higher-valued goods over time.

transportation, which has led to a sharp decline in the proportion of airlifted goods in trade after a long period of steady increase (Figures 14 and 15). For PICs, the increase in air transport costs has added substantially to the transport cost of perishable products (fish, vegetables and fruits).

Figure 14: International Containerized Freight
(Simple average cost in USD/TEU deflated by US GDP deflator)

Data source: Containerization International

Other key developments in international transportation also have had mixed impacts on the trading costs in PICs. It is worth noting that containerized shipping was introduced in PICs much later (mostly in the late 1970s and 1980s) than in other parts of the world, because of substantial investment involved, including in port facilities. In addition, competition in PICs' air and ocean transport

Figure 15: Trends in Airline Costs
(indices and in percent)

- Fuel Cost Index
- Composite Cost Index
- Percent share of fuel in operating index (RHS)

Data Source: Hummels, (2009)

industries is limited because of small market size and state monopoly. As a result, the benefits of technological advances may not have passed onto consumers as much as in other parts of the world.[33] One of the major benefits from technological advances over the past decades has been faster speed and greater reliability in shipping. This, in principle, would have helped island countries lower their transport cost relative to its competitors. However, remote, small states such as PICs do not appear to have been able to take much advantage of large, more efficient vessels because of their small trade volumes and the need to stop more frequently to serve small and dispersed destinations. Paradoxically, the technological

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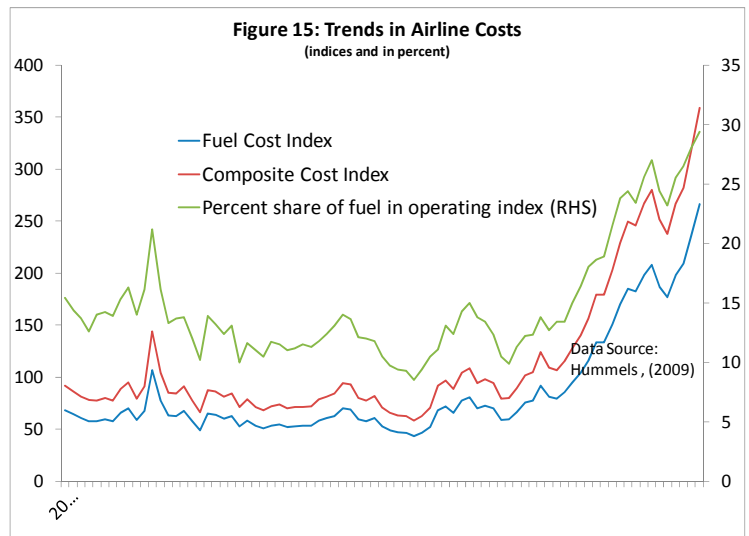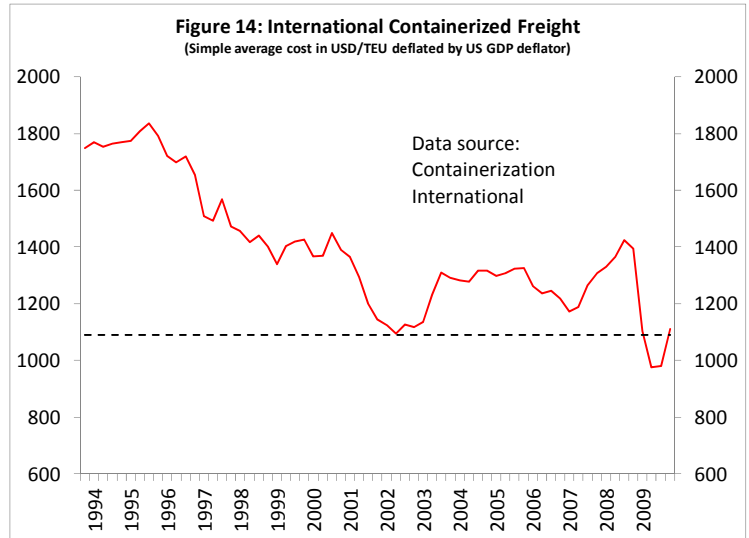
[33] Kleinert and Spies (2011) find that trade partners with 10 percent more exports enjoy 0.8 percent lower transport prices. Favaro et al. (2008) shows how lack of competition in the telecommunications industry in Samoa raised costs to consumers.

advances appear to have given a greater advantage to exporters of manufactured goods, as large vessels and greater speed and reliability allow finer segmentation of value chains. Associated with this, as the spread between high-priced and low-priced goods in each product category widens, the cost advantage enjoyed by high-end goods is growing over time (Hummels, 2007; 2009). Thus, without high value-added exports, PICs could be increasingly disadvantaged by transport cost.

VII. POLICY IMPLICATIONS

One of the key findings of the above econometric analysis is that Pacific island countries do seem to face lower speed limits in economic growth because of their remoteness. Growth volatility in PICs has also been often higher than in larger economies. It is important for policymakers to recognize the existence of such limits as unrealistic expectations for growth could lead to overly ambitious targets. Moreover, growth volatility also entails more prudent planning and maintaining larger policy buffers in good times.

Admittedly, there are significant challenges in raising growth, including finding a more effective way to allow aid to contribute to long-term domestic productive capacity as well as to reduce poverty. When a country is small and relatively poor, it is likely to receive more aid (relative to GDP) than a large country and hence there is no need to have a more depreciated real exchange rate in order to keep a balanced trade or current account. This allows the small country to enjoy a higher living standard than it would otherwise, through better public services and cheaper imports. At the same time, however, this means that the export sector has to be very efficient in order to be able to compete on the world market even when it enjoys a comparative advantage. While it seems difficult to fully overcome the effects of aid-supported strong exchange rates, PICs should nevertheless take measures to alleviate them by directing more aid to productivity improvements and accelerating structural reforms.

This analysis highlights the importance and difficulty of macroeconomic policies in creating a competitive environment in small states. As shown earlier, neither a fixed or flexible exchange rate regime would guarantee such an outcome. Most PICs maintain a pegged exchange rate regime, which provides a useful nominal anchor. Historically, however, PICs tend to run higher inflation than their trading partners (as many developing countries do), and periodically the fixed exchange rates become unsustainable and large step devaluations become necessary to correct external imbalances. On the other hand, a flexible exchange rate (or using a foreign currency) can also lead to rapid appreciation when there are large foreign exchange inflows, such as aid and resource rents. Such appreciation may be necessary for

maintaining macroeconomic stability (i.e., controlling inflation), but it may not be consistent with the objective of maintaining competitiveness. In principle, such inflows can be sterilized through reserve accumulations, but countries often do not fully sterilize them because of costs involved in mopping up local currency liquidity and resulting higher domestic interest rates. This tends to result in higher inflation and real exchange rate appreciation. In addition, foreign exchange markets are shallow in PICs, and a floating exchange rate regime may result in large volatility in the exchange rate, which would be harmful for trade.

This calls for better coordination of macroeconomic policies to maintaining competitiveness and stability. When a country maintains a fixed exchange rate regime, monetary policy must be subordinate to the exchange rate policy and ensure that inflation is not consistently higher than that of partner countries. Similarly, fiscal policy must be prudent to avoid pressure on domestic price levels and debt sustainability.[34] Large windfall inflows could be saved (e.g., through a sovereign wealth fund) for inter-generational distribution and consumption smoothing. Since the global financial crisis, macroeconomic policies in PICs have been geared toward supporting growth; both monetary and fiscal policies have been accommodative. These policies are appropriate given the circumstances. However, as noted earlier, higher inflation resulting from rising world food and fuel prices has led to significant real exchange rate appreciation in a number of countries over the past few years. At the same time, increased aid inflows in response to the crisis have allowed many PICs to maintain or accumulate foreign reserves. As economic recovery strengthens, import demand increases, and aid inflows decline, however, these countries may face challenges to revert their real exchange rates to more sustainable and competitive levels.

Structural reforms would be critical to mitigating the effects of strong exchange rates through higher productivity. When a country has a fixed exchange rate and faces a persistent higher inflation than its trading partners, raising productivity at a pace faster than trading partners is essentially the only way to avoid periodic devaluations.[35] Empirical research indicates that productivity growth in PICs has generally been slow and low investment is a key constraint

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[34] Yang at al. (2011) discussed macroeconomic policy coordination in the context of strengthening monetary policy transmission.

[35] One can think of the Chinese experience in recent years—the Yuan has faced pressure for appreciation despite China's higher inflation than its trading partners'.

on higher growth, as demonstrated in the case of Fiji (Box 3).[36] This is consistent with our findings in the previous sections that PICs need to raise the level of investment in order to grow faster, a conclusion that is self-evident but nevertheless particularly pertinent given PICs' low investment rate compared with peer countries. Our findings that political stability is important for growth in PICs are similarly conventional, but they should nevertheless reinforce PIC governments' resolve for better governance.

Improving competitiveness would be difficult without aggressively reducing the cost of distance and insularity, a principal source of PICs' growth disadvantage. As in the manufacturing sector, transportation and communication industries also exhibit economies of scale, and this again puts small and remote countries in disadvantage. The challenge ahead is not only scaling up investment in transport and communication infrastructure, but also continued reforms and appropriate regulation to ensure rigorous competition in these two industries. Greater regional cooperation could also help mitigate the effect of diseconomies of scale, as shown by the establishment of the Pacific Forum Line and the Pacific Islands Telecommunications Association.

The ultimate way to overcome smallness and distance is further integration with the global economy, and trade policy can play an important role in this process. PICs will need to adapt to a rapidly changing landscape in world trade and finance. As trade preferences under colonial ties are phased out or being eroded, PICs should seek deeper integration with metropolitan countries, particularly in trade in labor services. Much progress has been made in the temporary migrant workers programs with New Zealand and Australia, but the potential remains large relative to the size of labor forces in PICs. In some PICs, particularly the smaller ones that have fewer natural resources or are constrained in developing such resources, increased trade in labor services provides a critical source of income generation, which in turn also boosts domestic activities. Given the limited job opportunities at home, there is little risk of brain drain. PACER-Plus provides a useful framework for further integration with Australia and New Zealand, and to this end greater efforts could be made to accelerate the negotiations.

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[36] Chen and Singh (2011) estimate that total factor productivity growth in Fiji over the period 1983-2007 was only 0.5 percent per year, less than half the rates in Asian and Pacific countries.

Box 3. Fiji—Lessons and Hopes

Fiji's economic growth has now lagged other PICs for more than two decades. Once an envy of the Pacific, the Fijian economy only managed an average real GDP growth of 2.1 percent over the past two decades. While external shocks, such as the reduction of preference margin for the price of sugar exports and the erosion of tariff margins for textile and clothing exports to Australia and New Zealand, have no doubt contributed to this disappointing record, developments in domestic politics and economic policies have had a strong influence on the economic performance.

Since 1987, Fiji has experienced four coups. Research shows that these coups had an immediate negative effect on the economy (Singh, 2005; Jayaraman and Ward, 2003; and Narayan, Narayan and Prasad, 2006). Sugar, garments, tourism, building, construction, gold-mining were all affected, along with rapid exodus of financial and human capital. In addition to the short-run impact, elevated uncertainty over political developments has taken a toll on private investment, which has been declining and volatile since 1988.

Continuous fiscal expansion has led to increases in public debt over time, now reaching 51.5 percent of GDP. The fiscal deficit has also increased in recent years. Despite the increases in government expenditure, public investment had been declining until recently, depriving the country of much needed maintenance and improvements in infrastructure. With a pegged exchange rate, inflation has been running consistently higher than major trading partners, eroding the economy's competiveness and resulted in periodic devaluations. A 2009 devaluation provided a much needed boost to the export sector, especially the tourism industry and helped restore macroeconomic stability. The economy has since recovered steadily, growing 2 percent in 2011, one of the best performances in many years.

Slow progress in structural reforms has also reduced incentives to invest and to adapt to external changes. The uncertainty over government policy on the renewal of land leases contributed to low investment and poor productivity, slowing down the growth of sugar, tourism and other land-based industries. The mismanagement of the Fiji Sugar Corporation not only accelerated the decline of the sugar industry as a whole with the phasing out of preferential prices, but also placed a drain on public finances. Efforts have been made recently to address land lease problems, such as through the creation of the land bank, which is likely to provide more secure land access to investors and in turn improve returns for land owners. Efforts have also been made to revive the sugar industry and promote the tourism sector.

Progress has also been made in other areas, such as relaxing foreign exchange controls and reducing red tape and bureaucracy, but more remains to be done. Extensive price controls, albeit scaled back somewhat recently, and unpredictable policy decisions have often been cited as a disincentive to business and further reforms in these areas would help increase investor confidence.

Despite the disappointing performance over the past two decades, Fiji still possesses some key advantages for faster growth over most other PICs: the country still has a relatively strong human capital base, a more diversified production structure including niche manufacturing industries, a central location in the South Pacific, and natural resources, particularly fertile arable land. With good policies to ensure macroeconomic stability and sound structural policies, the country can regain its strength in the future.

Further integration with the global economy should also include strengthening trade and financial ties with Asia. Our analysis earlier suggests that PICs without mineral resources have not been able to take advantage of the increasingly affluent Asian markets. This is not surprising given that exporting non-mineral products to Asian markets would need both reliable supply and marketing. Some emerging Asian economies offer duty and quota-free entry of goods from least developed countries (LDCs) among PICs.[37] However, constraints on domestic supply have meant that these opportunities have not been fully utilized. For non-LDCs among PICs, it is important to engage with Asian countries to ensure that goods from the Pacific are not discriminated against as these Asian countries expand their free trade agreements. Given the supply constraints in PICs, it may seem irrelevant to secure market access in Asia at this stage; but secure market access may encourage foreign investment and increase the awareness of goods that PICs can offer. Asian entrepreneurs could help bring capital as well as fill in the skill and marketing gaps in PICs. A proactive policy toward Asia would be important.

VIII. CONCLUDING REMARKS

In many respects, the findings of this paper are unsurprising and yet have received little empirical support so far: PICs do face special challenges in economic growth because of their disadvantages arising from geography. It is equally unsurprising that there is plenty of room to raise growth by increasing investment and promoting trade openness as well as ensuring political stability. By reaching levels in other small island states in these areas, PICs could substantially speed up economic growth. The key question is how to increase investment and openness. The good news from this study is that lower investment and exports in the Pacific do not seem to be entirely the result of geography. This implies that economic and other policies can make a difference in speeding up growth in the Pacific. The large variations in the performance across countries within the Pacific provide some support that policies do matter. Thus the key challenge is to identify and implement policies that would be most effective in increasing openness and productive investment based on country circumstances.

Nevertheless, it is important to recognize the differences in natural endowments and economic circumstances across Pacific island countries. Micro-states may well face quite different challenges from their relatively large neighbors, principally Melanesian countries. These differences may necessitate different priorities and approaches to promoting

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[37] UN-defined LDCs in the Pacific include Kiribati, Samoa, Solomon Islands, Tuvalu, and Vanuatu.

investment and trade; detailed case studies would be highly desirable for formulating policy recommendations. There is also considerable room to refine studies like the current one, by updating relevant data and analysis. The fact that Pacific island countries have lagged behind other small states in growth over the past decade suggests that there may have been some fundamental changes taking place—either in policy settings or the external environment—that have made country size and location a more determining factor than before.

It is tempting to suggest that a competitive exchange rate is key to inducing higher investment and greater trade openness. While external shocks to trade and commodity prices seem to have contributed to the weakening competitiveness in some PICs over the past decade, evidence also points to the role played by macroeconomic policies. In the face of substantial size- and geography-induced cost disadvantages and large aid inflows, PICs need to manage their macroeconomic policies to ensure that their exchange rates allow domestic producers to compete on the world market in areas where they have a comparative advantage. This may prove critical to pursue private sector-led growth.

Maintaining competitiveness also entails structural reforms to improve efficiency in production, transport, and communication. Many reforms have been carried out over the past decades, and the payoffs have been significant in some areas, as shown by marked declines in the cost of telecommunication following the deregulation of the telecom industry. However, as the quest for faster and more inclusive growth continues, PIC governments will need to keep searching for such high-payoff reforms. The current unfavorable global environment should only strengthen the resolve of PIC governments to accelerate such reforms.

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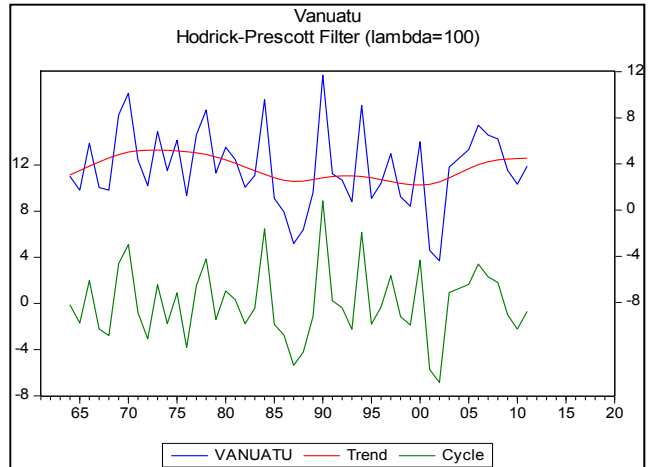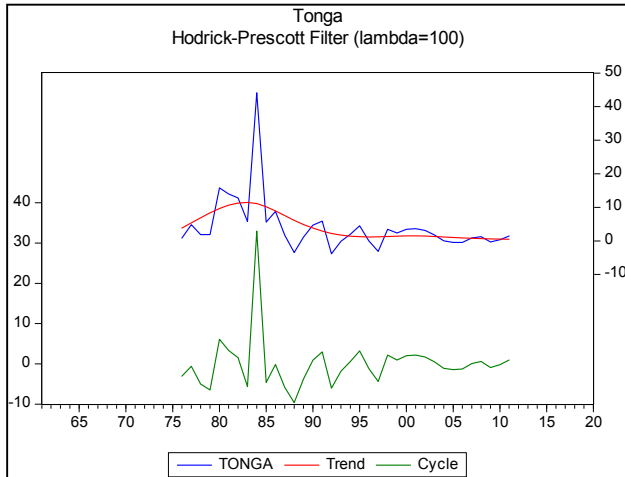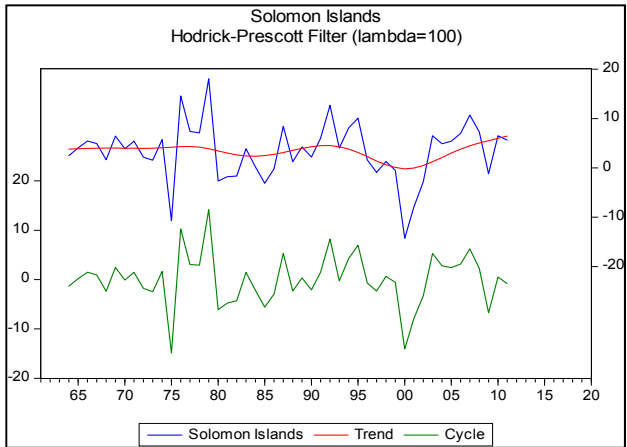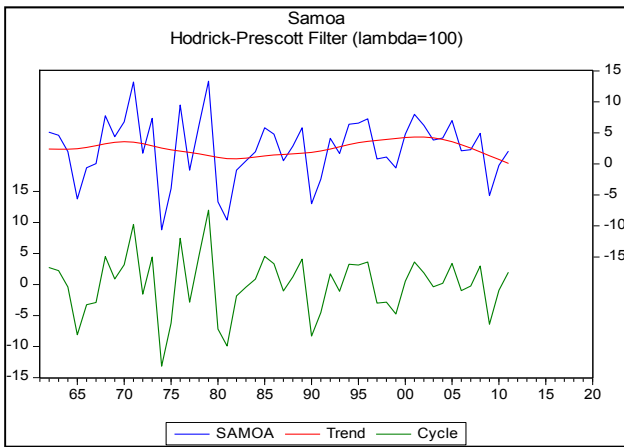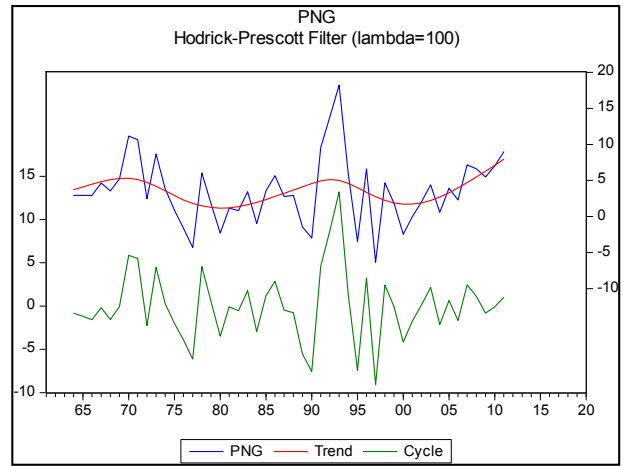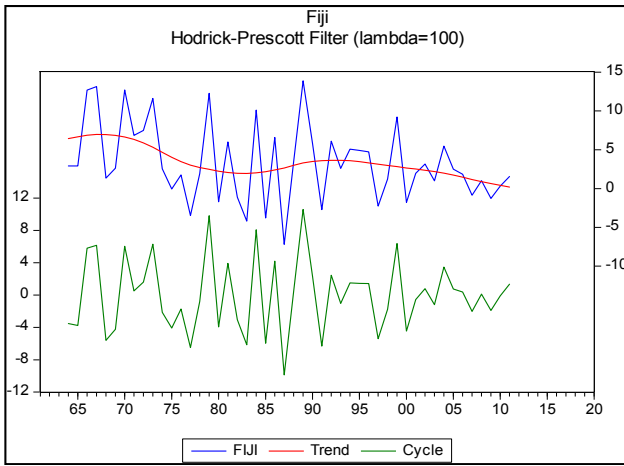
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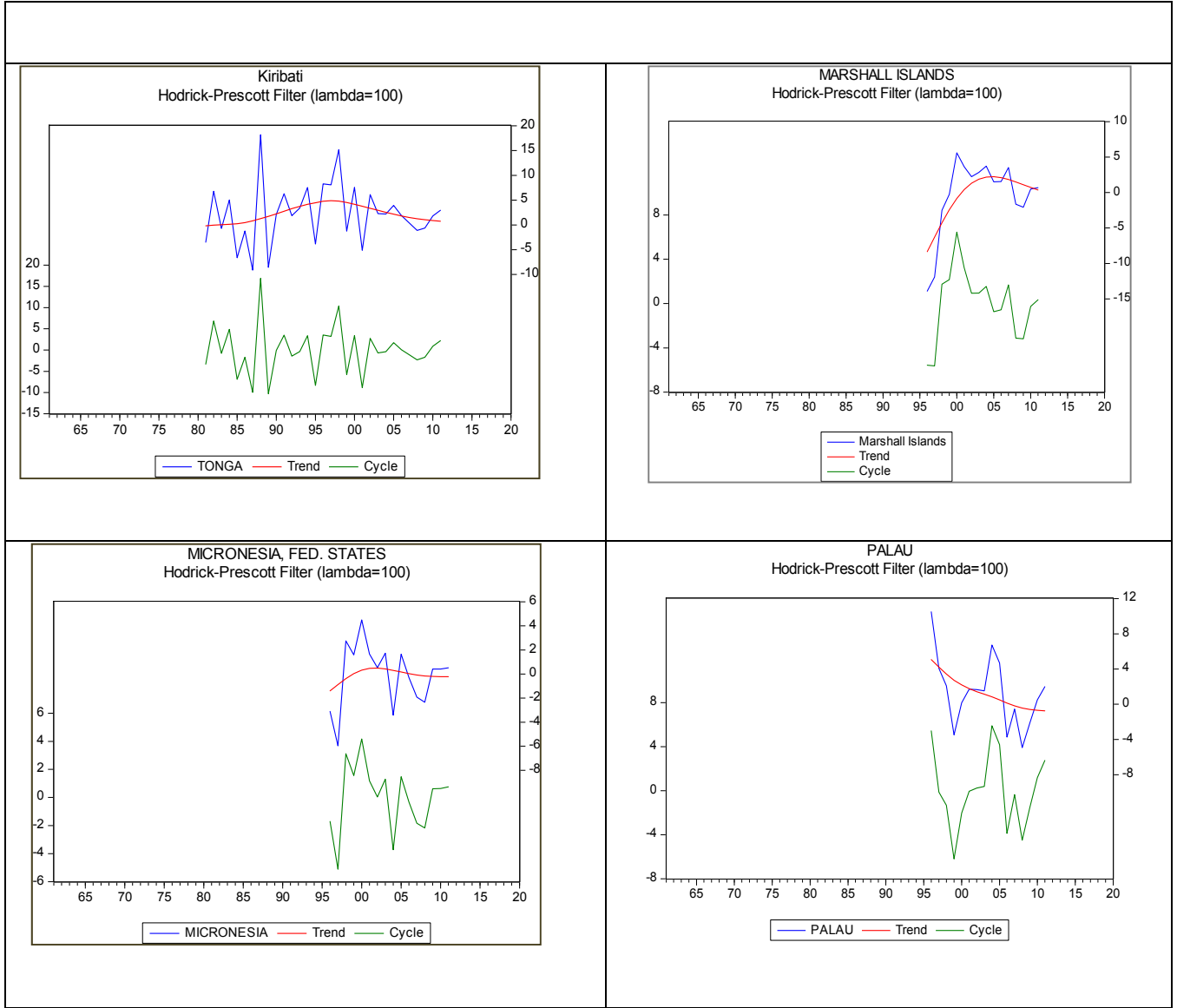
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Appendix I – Growth Trends in PICs

Fiji — Hodrick-Prescott Filter (lambda=100)

PNG — Hodrick-Prescott Filter (lambda=100)

Samoa — Hodrick-Prescott Filter (lambda=100)

Solomon Islands — Hodrick-Prescott Filter (lambda=100)

Tonga — Hodrick-Prescott Filter (lambda=100)

Vanuatu — Hodrick-Prescott Filter (lambda=100)

Appendix II. Country List and Data Description

Table A1: Country List

Africa (14)	America (12)	Europe (4)	Pacific (9)	Asia (6)
Botswana	Antigua and Barbuda	Estonia	Fiji	Bahrain
Cape Verde	Bahamas, The	Malta	Kiribati	Bhutan
Comoros	Barbados	Montenegro	Micronesia, Fed. Sts.	Brunei Darussalam
Djibouti	Belize	San Marino	Palau	Maldives
Equatorial Guinea	Bermuda		PNG	Qatar
Gabon	Dominica		Samoa	Timor-Leste
Gambia, The	Grenada		Solomon Islands	
Guinea-Bissau	Guyana		Tonga	
Lesotho	St. Kitts and Nevis		Vanuatu	
Mauritius	St. Lucia			
Namibia	St. Vincent and the Grenadines			
Sao Tome and Principe	Suriname			
Seychelles				
Swaziland				

Table A2: Average Values of Relevant Series over 1992-2008

	Small Economies	Non-Pacific Small Economies	Pacific Island Countries
Convergence effect (lnY_0)	7.98	8.15	7.40
Investment (ln(investment/GDP))	3.26	3.33	3.04
Population growth (ln(n+g+d))	1.88	1.88	1.87
Aid (aid/GNI, %)	7.96	5.69	20.01
Political stability	0.49	0.53	0.57
Exports (in percent of GDP)	52.11	56.97	35.08
Volatility (growth rate standard deviation, %)	4.61	4.36	5.48
Per capita GDP growth (%)	2.38	2.87	0.64
GDP weighted distance to major overseas markets (ln)	9.01	8.93	9.25