

Structural change versus economic inertia

Craig Sugden and Kiyoshi Taniguchi

Structural change is critical to the growth process as it helps ensure that an economy's resources are allocated to their most productive use. Yet such change can be difficult to achieve and even be resisted by governments. Differences in labour productivity among the Pacific island economies are linked to their success or lack thereof in achieving structural change. Those that have achieved the greatest change are also the highest income countries. At the other extreme, economic inertia is evident in the agriculture, forestry and fishing economies of Papua New Guinea, Solomon Islands, Kiribati and Vanuatu. These countries are yet to demonstrate the policy and institutional capacity to achieve structural change. Strains of economic inertia are also evident in the Fiji Islands, Marshall Islands and the Federated States of Micronesia. Samoa, Tuvalu and Tonga have achieved more progress; although in Tonga's case much of this was achieved some decades ago.

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Most developing economies make a productivity-enhancing transition from agriculture to industrial activity and ultimately to services. At a worker level, the process of structural change sees subsistence workers move to the informal sector and then to the formal sector. At a business level, self-funded small-scale operations are replaced by medium and large-scale businesses led by investors and staffed by employees. Such changes bring with them Schumpeter's (1942) 'creative destruction', as better performing industries

or operations expand while others contract or even disappear.

Structural change brings pressures. Some factor inputs will be shifted and some may become unemployed—the process will not be always Pareto optimal. This prospect can generate resistance. Governments can put off making the policy changes needed to facilitate reallocation of resources and raise productivity. They may protect low-productive activities in an attempt to preserve lifestyles or perhaps to protect vested interests. Resistance to change



can directly or indirectly penalise more productive activities; and opportunities for economic growth through structural change can be lost. The entry of new individuals and groups into the productive process can be stalled, and in the worst case some members of the community can be locked into a state of disadvantage.

Governments may lack the skills to navigate through structural change, despite their best intentions. This is a particularly important consideration in the Pacific island countries. Some Pacific island countries are only into their second decade of independence, and political systems in the larger and 'older' nations are yet to reach their 40th year. Institutional environments may not yet be ready for the changes that modern economies require.

Economic structure in the Pacific island countries

Within the Pacific island countries, agriculture, forestry and fishing accounted for 19 per cent of GDP on average in 2004 (or latest year), industry accounted for 16 per cent of GDP on average, and services accounted for the majority of GDP—65 per cent on average. Manufacturing, which is included within industry, is very small and only accounted for 5 per cent of GDP on average (Table 1). There are, however, very large differences in economic structure across the Pacific island countries. The differences broadly follow the international pattern. That is, the GDP share of agriculture, forestry and fishing tends to be lower if levels of GDP per head are lower, and the services share tends to be higher at higher income levels.¹

On an international comparison, many Pacific island countries have a large services sector. Eight out of 11 Pacific island countries have a services share equal to or above the

average for the upper-middle-income group of countries. Of the 141 countries included in the *World Development Indicators* (World Bank 2006), only two report a higher share of services in GDP than Palau and the Cook Islands.² For all Pacific island countries except Papua New Guinea and Solomon Islands, the services share is above the regional average for East Asia, South Asia, the Middle East and North Africa, Sub-Saharan Africa and Latin America and the Caribbean.

The agriculture, forestry and fishing sector is at the high end of the international range in Papua New Guinea and Solomon Islands. Of the 141 countries included in the *World Development Indicators*, only 24 countries have a share as high as Papua New Guinea, and only a dozen report a share comparable to Solomon Islands (World Bank 2006). The sector is also relatively high in other Pacific island countries. All except Palau and Kiribati report an above-the-average share for the middle-income group of countries in East Asia, the Middle East and North Africa, and Latin America and the Caribbean.

Most Pacific island countries have a small industry sector. In most, the share of GDP accounted for by industry is 16 per cent or less. This compares to 28 per cent in the low-income group of countries, 37 per cent in the middle-income group of countries, and 26 per cent in high-income countries. Only Papua New Guinea, Fiji Islands and Samoa report an industry sector comparable to that seen in other regions.

GDP shares do not fully portray the economic structure of the agriculture-intensive Pacific island countries, as they tend to obscure the large share of the workforce earning low incomes from subsistence and informal activities. In the lower-income Melanesian countries, in the order of three-quarters of economically active people are engaged in agriculture



Table 1 International comparisons of GDP shares

	Industry value added as a share of GDP in 2004 (per cent) ^a				Gross national income per head (PPP, 2004)
	Agriculture, forestry and fishing	Industry ^b	Services ^c	Manufacturing (component of industry)	
Pacific island average	19	16	65	5	..
Papua New Guinea	30	31	40	6	2,280
Solomon Islands ^d	53	7	40	3	1,800
Kiribati ^e	9	10	81	1	..
Vanuatu ^f	15	9	76	4	2,950
Tuvalu ^g	17	15	67	5	..
Samoa	14	27	59	15	5,610
Tonga ^h	24	13	64	4	7,850
Fiji Islands	15	23	62	15	5,750
Marshall Islands ⁱ	13	16	71	2	..
Palau	4	14	82	2	..
Cook Islands	14	8	78	4	..
Low income	23	28	49	15	2,258
Low and middle income	12	36	52	18	4,726
Middle income	10	37	53	18	6,644
Lower middle income	12	41	46	..	5,829
Upper middle income	6	32	62	20	10,168
High income	2	26	72	18	31,009
East Asia and the Pacific	13	45	42	..	5,332
South Asia	21	27	52	16	2,854
Middle East and North Africa	12	39	49	14	5,734
Sub-Saharan Africa	16	32	52	15	1,842
Latin America and the Caribbean	9	34	58	16	7,661
Europe and Central Asia	8	32	60	19	8,350
Europe (European Monetary Union)	2	27	71	19	..

^a GDP is valued at market prices for Papua New Guinea, Marshall Islands, Tonga, Samoa and Kiribati, while it is valued at factor cost for Fiji Islands, Solomon Islands, Vanuatu, Tuvalu and Cook Islands. GDP by industry is not available for Federated States of Micronesia). Non-Pacific island data are predominately at market prices, but some country estimates are at factor cost.^b Industry includes mining, manufacturing (also reported separately), construction, electricity, water and gas. ^c This sector is derived as a residual (from GDP less agriculture and industry) and may not properly reflect the sum of services output, including banking and financial services. For some countries it includes product taxes (minus subsidies) and may also include statistical discrepancies. ^d Share of GDP at constant prices. ^e Provisional estimates. ^f 2003 data. ^g 2002 data. ^h 2003 data (average of 2002–03 and 2003–04, year to June). ⁱ Data for 1999.

Notes: The sum of value added does not equal 100 due to rounding. GDP=gross domestic product, PPP=purchasing power parity

Sources: GDP shares for the Pacific island countries are derived from Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country national account releases and statistical compendiums, and regional and country economic reports. GDP shares for other countries and estimates of gross national income are from World Bank 2006. *2006 World Development Indicators*, World Bank, Washington, DC.



and fishing, yet such activities are estimated to generate as little as 19 per cent of GDP. Employment data help provide a richer picture of the economic structure.³

Agriculture, forestry and fishing account for 9 per cent (Cook Islands) to 86 per cent (Papua New Guinea) of employment, or 48 per cent on average. Industry is estimated to account for up to 11 per cent of employment, or 4 per cent on average, with services accounting for 12 to 88 per cent of employment, or 48 per cent on average. Manufacturing—included within industry—accounts for one to 10 per cent of employment, or 4 per cent on average (Figure 1).

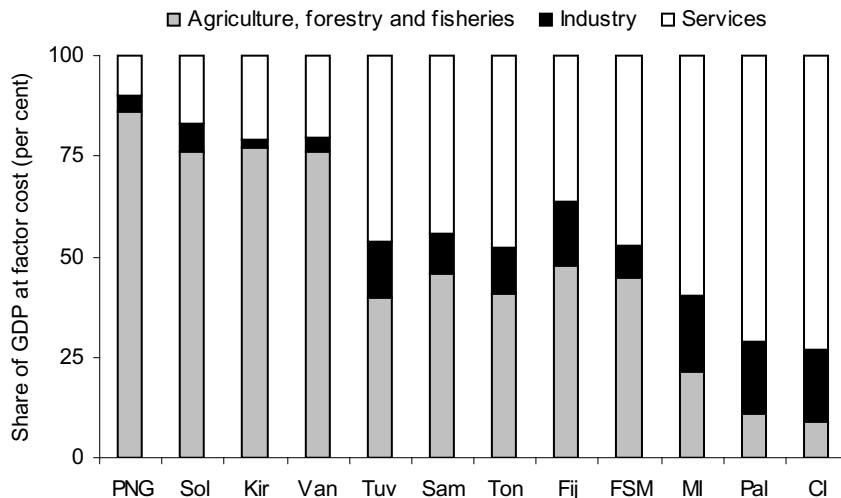
The employment data point to three groupings of Pacific island countries, in terms of their economic structure. Papua New Guinea, Solomon Islands,

Vanuatu and Kiribati are characterised by an orientation to agriculture, forestry and fishing, which accounts for 75 per cent or more of employment. At the other end of the region's development spectrum are Palau and the Cook Islands, where services dominate the economy. The remaining Pacific island countries constitute a third group of countries with mixed economic activity. In most countries of this group, agriculture, forestry and fishing accounts for around half of employment.

Is structural change occurring?

The substantial differences in economic structure among the Pacific island countries carries an important message. They point to economic inertia in some and large structural change in others. This is evident

Figure 1 Employment shares in the Pacific island countries



PNG=Papua New Guinea, Sol=Solomon Islands, Kir=Kiribati, Van=Vanuatu, Tuv=Tuvalu, Sam=Samoa, Ton=Tonga, Fij=Fiji Islands, MI=Marshall Islands, Pal=Palau, CI=Cook Islands, GDP=gross domestic product.

Source: Data are for the latest census year, or comparable employment survey: 1996 for the Fiji Islands; 1999 for Solomon Islands, Vanuatu and the Marshall Islands; 2000 for Papua New Guinea, Kiribati and FSM; 2001 for Samoa and the Cook Islands; 2002 for Tuvalu; 2003 for Tonga; and 2005 for Palau.



in the changes in GDP shares since 1990. The contraction in the relative importance of agriculture, forestry and fishing and the expansion of services in the Cook Islands and Palau is comparable to that seen internationally (Table 2). In contrast, the agriculture, forestry and fishing sector's share of GDP has expanded in Papua New Guinea, Solomon Islands and Kiribati since 1990.

If we look at the low-income group of countries, we see that the agriculture, forestry and fishing share of GDP fell by 28 per cent on average between 1990 and 2004, while the average services share rose by 17 per cent. The services share has fallen in Papua New Guinea, Solomon Islands and Kiribati since 1990. Vanuatu is the only agriculture, forestry and fishing-oriented Pacific country to have achieved structural change similar to that achieved by comparable countries.

Tuvalu and Samoa have achieved a shift from agriculture, forestry and fishing to services similar to non-Pacific countries of comparable incomes. Agriculture, forestry and fishing have declined in importance in Tonga and Fiji Islands, while industry has expanded at a higher rate than seen in the low-income and lower-middle income group of economies. Marshall Islands has also achieved reasonable expansion in industry, but there has been little shift from agriculture, forestry and fishing to services and much less than observed in comparable non-Pacific countries.

Study of the employment data deepens understanding of structural change within the Pacific island countries. There has been very little change over 40 years in the structure of the agriculture, forestry and fishing economies. The share of employment in agriculture, forestry and fishing in Solomon Islands and Vanuatu has declined over the period, but only slightly. For Vanuatu, the decline has been apparent

since around 1980 while for Solomon Islands the decline has been more recent. The share of employment in this sector has been trending upwards in Kiribati but has been stable in Papua New Guinea since at least 1966 (Figure 2).⁴

In contrast, the service-oriented economies of Cook Islands and Palau have undergone a transformation. In 1956, Cook Islands reported 72 per cent of its workforce as employed in agriculture, forestry and fishing. The current share is 15 per cent. A similar high rate of long-term change is evident in Palau.

In the 1950s Tonga and Samoa reported a share of the workforce engaged in agriculture, forestry and fishing similar to that in Cook Islands. However, the shift away from agriculture, forestry and fishing has not been as rapid as in Cook Islands. By around 2000 the sector's share of employment was in the order of 40 to 45 per cent. Although the rate of structural change is slower than in the service-oriented economies, Samoa and Tonga are well into a long-term transition away from agriculture, forestry and fishing.

The current agriculture, forestry and fishing share of employment in Tuvalu is comparable to Samoa and Tonga. Although it cannot be confirmed by the data, it appears likely that there has been substantial contraction in the sector in Tuvalu over recent decades.⁵

There has been a decline in the agriculture, forestry and fishing employment share in Federated States of Micronesia and Marshall Islands. The sector's share of employment in Marshall Islands has fallen to a level comparable to the Cook Islands and Palau. In Federated States of Micronesia, however, the share has recently begun to rise—an outcome attributable to cuts in public sector employment (that saw people move back to subsistence lifestyles) forced by the 1980s unsustainable fiscal expansion.



Table 2 International comparisons of the change in GDP shares, 1990–2004 (per cent)

	Change in GDP shares from 1990 to 2004 (per cent) ^a			
	Agriculture, forestry and fishing	Industry ^b	Services ^c	Manufacturing (component of industry)
Pacific island average	-20	4	6	-14
Papua New Guinea	2	-	-2	-38
Solomon Islands ^d	9	-12	-8	-19
Kiribati ^e	11	47	-5	-13
Vanuatu ^f	-28	-27	14	-26
Tuvalu ^g	-36	1	17	1
Samoa ^h	-29	-10	17	-28
Tonga ⁱ	-21	13	9	-18
Fiji Islands	-32	24	4	16
Marshall Islands ^j	-6	26	-3	20
Palau ^k	-76	6	19	14
Cook Islands	-36	10	10	-6
Low income	-28	8	17	-
Low and middle income	-33	-3	16	-22
Middle income	-38	-5	15	-28
Lower middle income	-37	5	10	..
Upper middle income	-40	-18	22	-9
High income	-33	-21	11	-18
East Asia and the Pacific	-48	13	20	..
South Asia	-32	0	21	-6
Middle East and North Africa	-37	18	-	-
Sub-Saharan Africa	-20	-6	11	-12
Latin America and the Caribbean	-	-6	5	-27
Europe and Central Asia	-50	-26	46	..
Europe (European Monetary Union)	-50	-18	13	..

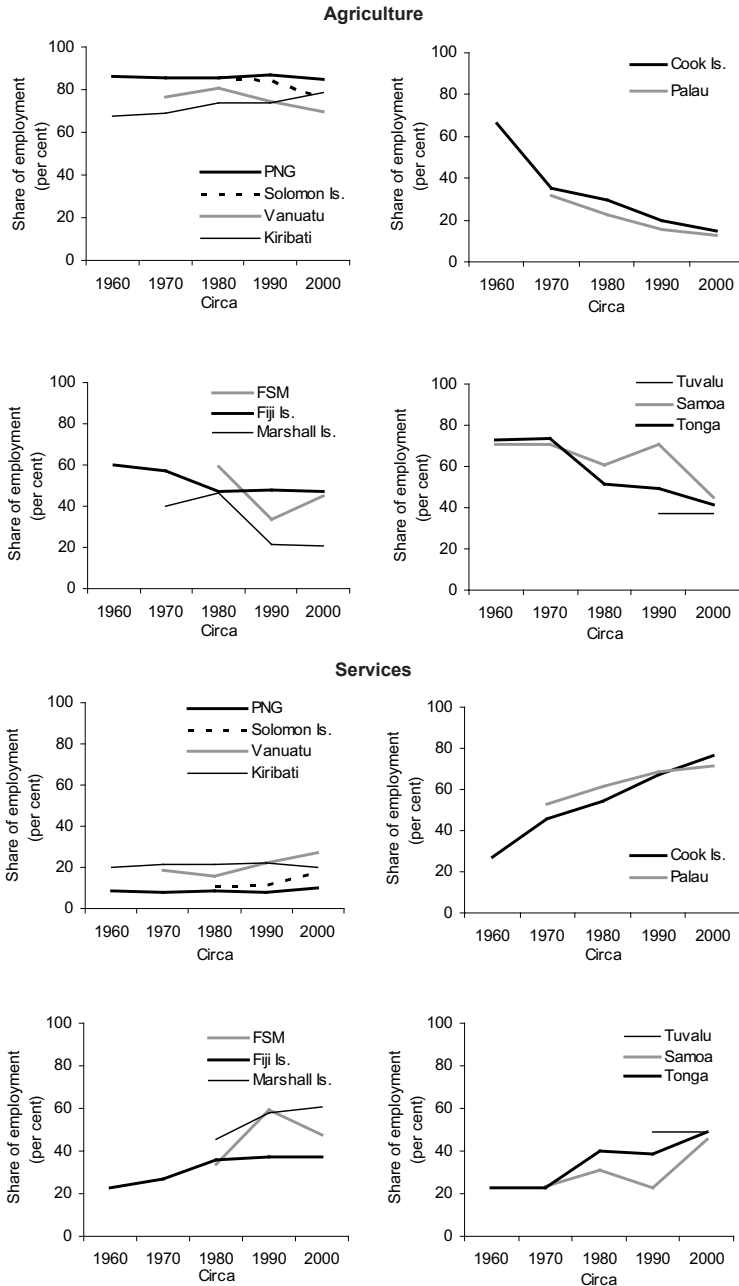
^a GDP is valued at market prices for Papua New Guinea, Marshall Islands, Tonga, Samoa and Kiribati, while it is valued at factor cost for Fiji Islands, Solomon Islands, Vanuatu, Tuvalu and Cook Islands. GDP by industry is not available for FSM. Non-Pacific island country data are predominately at market prices, but some country estimates are at factor cost. ^b Industry covers mining, manufacturing (also reported separately), construction, electricity, water and gas. ^c This sector is derived as a residual (from GDP less agriculture and industry) and may not properly reflect the sum of services output, including banking and financial services. For some countries it includes product taxes (minus subsidies) and may also include statistical discrepancies. ^d Share of GDP at constant prices. ^e 1991 data. 2004 data are provisional estimates. ^f 2003 data. ^g 2002 data. ^h 1994 data. ⁱ 2003 data are reported (averages of 2002–03 and 2003–04). ^j Data are for 1991 and 1999. ^k Data for 1992.

Note: GDP=gross domestic product

Sources: Data for the Pacific island countries are derived from Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island national account releases and statistical compendiums, and regional and country economic reports; data for other countries are from World Bank 2006. *2006 World Development Indicators*, World Bank, Washington, DC.



Figure 2 Employment shares



Note: Shares are based on averages for years close to the periods shown.

Sources: Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country census releases and statistical compendiums.



The share of employment in agriculture, forestry and fishing in Fiji Islands has changed little over the most recent 20-year period. The share is below what it was 40 years ago, but the slow rate of decline had halted by around 1980. Hence, the employment data suggest this mixed economy is yet to commence a sustainable transformation.

Long-term changes in the services share of employment mirror changes in the share of employment in agriculture, forestry and fishing. For example, the services share is low in Papua New Guinea, Solomon Islands, Vanuatu and Kiribati, but has risen rapidly in Cook Islands and Palau. This mirroring is the result of the low share of industry employment in total employment. Only Fiji Islands has maintained a large share of employment in industry over a long period of time. Even this appears unsustainable, given recent closure of the country's gold mine and much of the garment industry.

The extent of structural change can be summarised by the coefficient of structural change. This measure has a useful intuitive interpretation. A value of zero indicates no structural change, while 100 indicates a complete reversal of structure. Based on industry-level data, for half of the Pacific island countries one per cent or more of the economy's resources have been reallocated per annum over the last 20 to 40 years. The rate of change has been close to this in Tuvalu over the most recent 10-year period. But the rate of change has been half this rate in the remaining Pacific island countries. At an industry level, economic inertia is evident in Papua New Guinea, Solomon Islands, Kiribati and Vanuatu, while the Fiji Islands' economy has also been very slow to change over the past 20 years (Figure 3).⁶

Data on wage employment reinforce the finding from the industry-level data that structural change has occurred. As a share of total employment, wage employment

accounted for 20 per cent of employment or less circa 2000. In Kiribati it has fallen from 27 per cent over the past 30 years. In Papua New Guinea the share has fallen to 10 per cent, half the level of the 1960s. At the opposite end of the region's development spectrum, the share has risen above 80 per cent in Palau and to 70 per cent in Cook Islands.

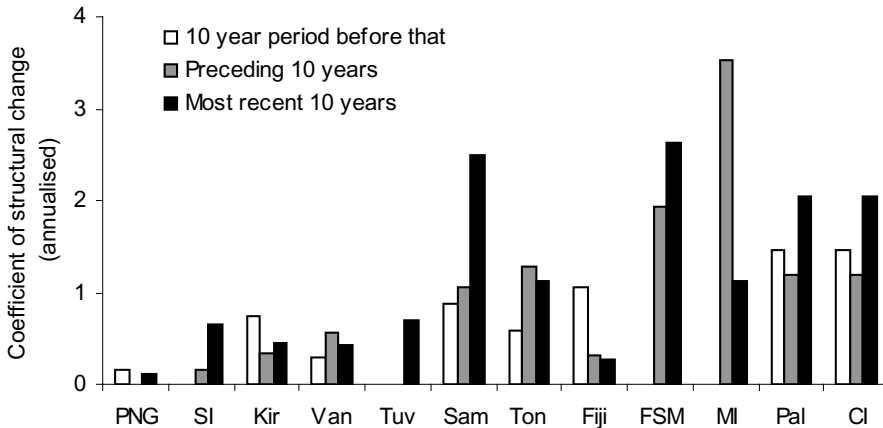
In Tonga and Tuvalu, wage employment had risen to account for the order of 50 per cent of employment by 1990, and has remained around that level. The share of employment earning wages has also grown to around 50 per cent in Samoa, although the increase is more recent. The latest wage share in the Marshall Islands is close to the level of 20 years ago, while the share has fallen in Fiji Islands over the most recent 20-year period and in FSM over the latest ten-year period. For these three mixed-economies, wage employment provided 35 to 49 per cent of total employment circa 2000.

Data on cash-based employment, which includes employers and own workers as well as wage employees, point to somewhat more structural change in some Pacific island countries than is evident at the industry level. Fiji Islands and Marshall Islands are substantially more cash-oriented than Samoa, Tonga and Tuvalu. This is despite the wage share of employment in the latter three being at least as high. Own-account workers have a relatively larger presence in Fiji Islands and Marshall Islands, a presence that has risen over time. The cash orientation of Tonga is reported to have declined, meaning subsistence is the main means of earning a living for a rising share of the Tongan workforce.

The data on total cash-based employment also highlight the monetisation of the PNG economy, with the decline in cash employment more than replaced by expansion in other forms of cash



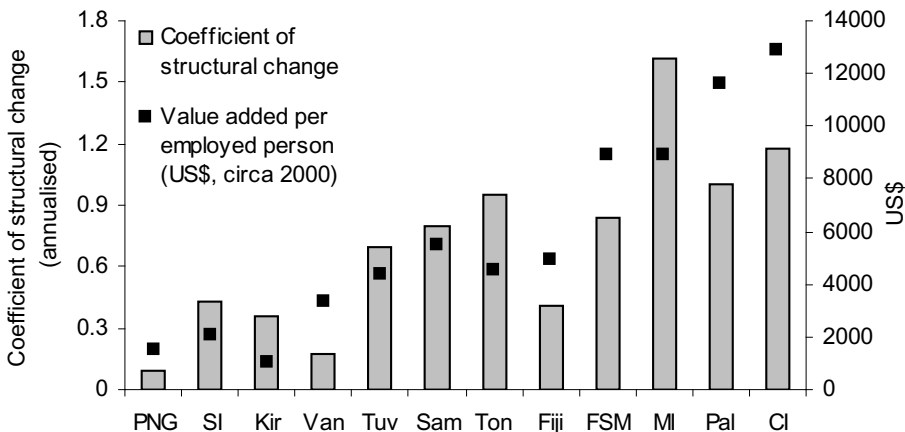
Figure 3 Structural change by 10-year period



Note: Measures are derived from employment data for nine industries and for the period 1966–71 to circa 2000, with the exception of Solomon Islands (the earliest data available are for 1976), Tuvalu (1991) and FSM and Marshall Islands (1980). The estimate for Papua New Guinea for the most recent 10 years refers to the most recent 20-year period.

Sources: Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country census releases and statistical compendiums.

Figure 4 Structural change and the level of labour productivity



Note: The coefficient of structural change is derived from employment data for nine industries and for the period 1966–71 to circa 2000, with the exception of Solomon Islands (the earliest data available are for 1976), Tuvalu (1991) and FSM and Marshall Islands (1980).

Sources: Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country census releases and statistical compendiums.



employment.⁷ This monetisation is not yet evident in the other agriculture, forestry and fishing Pacific island countries—Solomon Islands, Vanuatu and Kiribati.

Is structural change helpful for growth?

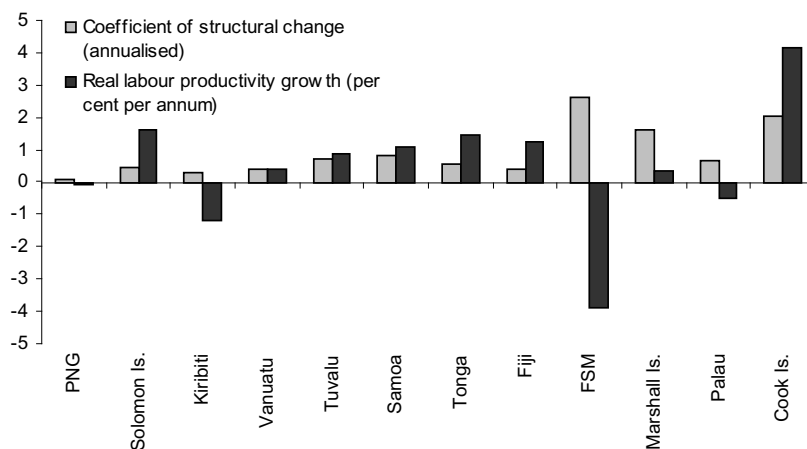
Perhaps the simplest way to recognise the relevance of structural change to the Pacific island countries is to look at the relationship between economic structure and income levels internationally. The share of agriculture, forestry and fishing in GDP tends to be higher at low income levels and the services share tends to be higher at higher income levels. Hence, structural change and income levels are positively related. This suggests that countries that begin the journey of structural change away from a dependence on agriculture, forestry and fishing are likely to realise higher income levels over time. The relationship is evident in the Pacific islands. The higher-income Pacific countries tend to have a higher services share, and the agriculture, forestry and fishing-oriented countries have low incomes (see Table 1).

The relevance of structural change is also evidenced by comparisons of measures of structural change and labour productivity levels in the Pacific island economies.

The agriculture, forestry and fishing-oriented economies have undergone relatively little structural change and have the lowest average labour productivity levels (Figure 4). At the other extreme of the region's development spectrum, the service-oriented economies have undergone a high rate of structural change and have the highest average labour productivity levels. Most of the remaining Pacific island mixed economies sit between these two groups, in terms of the rate of structural change and income levels.

A deeper understanding of the relevance of structural change is provided by the analysis of the growth in labour productivity. For example, a positive relationship between structural change and productivity growth is evident in Cook Islands, Tonga, Samoa and Tuvalu. These economies have achieved relatively high productivity growth and also relatively high rates of structural change (Figure 5). Papua New Guinea's growth performance is the most disappointing in the region. If the effects of the enclave mining and petroleum sectors are removed, the economy is shown to have contracted. Average productivity in the non-mining sector is estimated to have fallen by 0.6 per cent per annum on average from 1966 to 2001. This poor performance is consistent with the absence of structural change in Papua New Guinea.

A positive relationship between structural change and growth is not evident in FSM and the Marshall Islands, and the recent data for Palau. These economies experienced a large increase in official payments from the United States during the 1980s. The resulting expansion in the civil service and public capital projects brought about large structural change. Since economic growth depended on foreign aid that was not going to continue to grow, the expansion was unsustainable and the public sector was forced to contract. The problem was most severe in Federated States of Micronesia where governments spent in anticipation of the receipt of funds, raising expenditure faster than revenue and grants. This experience largely explains the rise and subsequent fall in the services share of employment in Federated States of Micronesia reported above. The problem was least severe in Palau, given its firmer fiscal position and the economic underpinning provided by a growing tourism industry. The economy has grown in recent years after contracting in the late 1990s. Overall,


Figure 5 Long-term structural change and labour productivity growth


Note: The estimates relate to 1966 to 2000 for Papua New Guinea, 1976 to 1999 for Solomon Islands, 1979 to 2000 for Kiribati, 1979 to 1999 for Vanuatu, 1991 to 2002 for Tuvalu, 1981 to 2001 for Samoa, 1976 to 2003 for Tonga, 1966 to 1996 for the Fiji Islands, 1994 to 2000 for FSM, 1980 to 2000 for Marshall Islands, 1995 to 2005 for Palau and 1991 to 2001 for Cook Islands. The coefficient of structural change is derived from employment data for nine industries.

Sources: Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country census releases and statistical compendiums.

the recent growth performance of these economies is disappointing, and this is reflected in structural change and productivity growth.

The long-run decline in labour productivity in Kiribati is attributable to the closure of the country's phosphate mine in 1979. Average productivity in the non-mining sector is estimated to have risen by a relatively good 0.9 per cent per annum on average from 1978 to 2000, yet the coefficient of structural change is low for this period at 0.25 per cent per annum for the non-mining part of the economy. Solomon Islands had also achieved relatively good productivity growth, given its low rate of structural change.⁸ Hence, factors other than structural change have been important to the growth performance of Kiribati and Solomon Islands.

Vanuatu's low productivity growth has coincided with a low rate of structural change. The productivity growth in Fiji Islands was all achieved in the early years of independence. Labour productivity was unchanged between 1976 and 1999, and the coefficient of structural change was also low during this period at 0.25 per cent per annum.

Shift-share analysis can be used to identify how much productivity growth is attributable to structural change. This technique separates labour productivity growth into three components

- an intra-sectoral effect. This is the contribution to labour productivity from growth in productivity within an industry. It shows the growth that may have been achievable in the absence of any structural change



- a static-shift effect. This is the contribution to labour productivity from a shift in resources from industries with low-labour productivity to higher productivity industries
- a dynamic-shift effect. This is the contribution to labour productivity from a shift of resources from low-labour productivity growth to higher productivity growth industries. When it is negative, resources are being shifted to lower growth industries.⁹

A 'structural bonus' is said to exist when the static-shift effect is positive. That is, growth is benefiting from the reallocation of the economy's resources to more productive uses. If the dynamic-shift effect is negative, a 'structural burden' is said to exist. It will be negative if industries with high productivity growth are unable to maintain their share of employment. In this sense, structural change would be moving resources away from better uses. The total effect of structural change is captured by the addition of the static-shift and dynamic-shift effects.

The results from shift-share analysis of the industrial composition of the Pacific island economies indicate that the first component, intra-sectoral productivity growth, has been an important element of the region's growth (Table 3). Six of the nine countries included in the shift-share analysis—Cook Islands, Fiji Islands, Tonga, Tuvalu, Vanuatu and Solomon Islands—achieved positive intra-sectoral productivity growth over the full period studied. This suggests that these economies would have achieved higher labour productivity even in the absence of structural change.

All of the nine countries studied other than Kiribati are estimated to have realised a structural bonus over the period studied. That is, they have gained from the shift of resources to higher productivity areas. In the case of Palau, Tonga, Tuvalu and Solomon

Islands, the structural bonus was the main (or only) contributor to productivity growth.

There is also a structural burden in most Pacific island countries studied. This is observed in Cook Islands, Palau, Tonga, Tuvalu, Solomon Islands and Papua New Guinea. The source of this structural burden varies between countries. For example, in Tonga the main factor has been a large expansion in employment in the low-profit, state-owned financial institutions. This has seen more people employed in an industry experiencing falling productivity levels, giving rise to a negative dynamic-shift effect. In Cook Islands, the negative dynamic effect is attributable to a large fall in employment in agriculture in the late 1990s.¹⁰ In Kiribati, it is a result of the closure of the high productivity phosphate mine.

In net terms, structural change is positively related to productivity growth in five of the nine Pacific island countries included in the shift-share analysis (Fiji Islands, Tonga, Tuvalu, Vanuatu and Solomon Islands), almost no impact in three (Palau, Cook Islands and Papua New Guinea), and a negative impact in Kiribati.¹¹ In the five Pacific island countries where structural change has had a significant, net positive impact, it accounted for 30 to 65 per cent of all labour productivity growth.¹²

On balance, it is concluded that intra-sectoral productivity growth has made a somewhat larger contribution to growth than structural change, but structural change is nonetheless an important element of the region's growth.¹³ Structural change has even helped achieve growth in those Pacific island countries that have only achieved low productivity growth. Thus, success in achieving structural change is an important factor behind the productivity differences across the Pacific island countries.



Table 3 Contribution to productivity growth

	Labour productivity growth (per cent per annum)		Intra- sectoral effect	Contribution to growth			Coefficient of structural change (annualised)	
	Total effect	Structural change effect		Static-shift effect	Dynamic-shift effect	Total effect	Coefficient of structural change (annualised)	
Papua New Guinea								
1966 to 2000	-0.05	0.00	-0.01	0.21	-0.22	0.09	0.09	
1966 to 1971	1.09	0.06	0.00	0.11	-0.05	0.45	0.45	
1971 to 1980	-0.76	-0.01	-0.06	-0.01	0.00	0.15	0.15	
1980 to 2000	-0.02	-0.08	0.07	0.02	-0.10	0.10	0.10	
Kiribati								
1978 to 2000	-1.21	-0.16	-0.07	-0.33	0.17	0.32	0.32	
1978 to 1985	-6.24	0.00	-0.36	-0.24	0.23	0.58	0.58	
1985 to 1990	-2.26	-0.04	-0.07	0.19	-0.22	0.75	0.75	
1990 to 1995	1.69	-0.45	0.53	-0.22	-0.22	1.49	1.49	
1995 to 2000	4.36	0.13	0.11	0.13	0.00	0.68	0.68	
Solomon Islands								
1986 to 1999	1.85	0.15	0.12	0.23	-0.08	0.66	0.66	
Vanuatu								
1989 to 1999	2.66	0.10	0.20	0.09	0.00	0.44	0.44	
Tuvalu								
1991 to 2002	0.89	0.03	0.07	0.14	-0.11	0.69	0.69	
Tonga								
1976 to 2003	1.45	0.31	0.17	0.84	-0.54	0.58	0.58	
1976 to 1986	2.47	0.24	0.03	0.51	-0.26	0.59	0.59	
1986 to 1996	1.05	-0.21	0.32	0.06	-0.28	1.28	1.28	
1996 to 2003	0.57	0.06	-0.02	0.18	-0.12	1.12	1.12	



Fiji Islands								
1966 to 1996	1.25	0.31	0.14	0.13	0.02	0.41		
1966 to 1976	3.90	0.35	0.12	0.06	0.06	1.05		
1976 to 1986	-0.36	-0.02	-0.02	-0.01	0.00	0.31		
1986 to 1996	0.26	0.02	0.01	0.03	-0.02	0.27		
Palau								
1995 to 2005	-0.52	-0.06	0.01	0.03	-0.02	0.65		
1995 to 2000	-1.92	-0.11	0.02	0.11	-0.09	2.21		
2000 to 2005	0.90	0.17	-0.12	0.06	-0.18	2.78		
Cook Islands								
1991 to 2001	4.17	0.48	0.03	0.12	-0.09	2.04		
1991 to 1996	5.52	0.31	0.00	0.04	-0.04	2.34		
1996 to 2001	2.84	0.18	-0.03	0.07	-0.10	2.32		

Note: The calculations could not be done for all Pacific Island countries. The coefficient of structural change is derived from employment data in nine industries.

Sources: Secretariat of the Pacific Community, 2007. Pacific Regional Information System (PRISM), Secretariat of the Pacific Community, Noumea; Pacific island country census and national account releases and statistical compendiums, and regional and country economic reports.



The need for change

Looking ahead, it is difficult to envisage the Pacific island countries achieving good income growth without structural change. Their growth journey will be an economic transition from agriculture, forestry and fishing to services. The countries that remain dependent on agriculture, forestry and fishing will lock too much of their resources in what is a low productivity sector and are likely to fail to achieve growth. In contrast, the better performing Pacific island countries will be characterised by growing service sectors. It is the service sectors that are the most likely to achieve high productivity growth with the help of supportive institutional and policy environments.

Most Pacific island countries can expect to skip the industrialisation phase seen in other regions. The region's economies are too small and remote to sustain large manufacturing sectors, and the experience is that the services sector provides better opportunities for long-term growth. However, some countries have made progress towards industrialisation. Papua New Guinea is the region's leader in this regard, given its large mining and petroleum industry. Samoa and Fiji Islands also have substantial industry sectors and are the only Pacific island countries with manufacturing sectors of a size approaching those of comparable countries. But the long-term growth performance in Papua New Guinea and Fiji Islands is poor, suggesting a larger industrial sector is not the key to growth even in larger Pacific island countries.

Cook Islands and Palau are well placed to continue to grow through tourism. The high 'tourism intensity' of these countries sets a benchmark for the region that suggests the region's tourism potential is only lightly developed.¹⁴ Samoa and Tonga share the potential to grow through tourism. Importantly, they share with

Palau and Cook Islands the benefits of well-educated populations and close ties with advanced economies. Moreover, they have the potential benefit of large overseas populations and the remittances and skills they provide.

Tuvalu lacks some of the pluses for growth enjoyed by Tonga and Samoa, but has the benefit of large aid flows and offshore sources of income. While climate change is placing the future of Tuvalu's low-lying atolls at risk, its progress over recent decades suggests it has achieved the requirements for growth and can continue a transition from agriculture and fishing to a service-oriented economy.

The remaining mixed-economy Pacific island countries—Fiji Islands, Marshall Islands and FSM—are also well placed to achieve growth through an increasing service orientation. Tourism, offshore income, and aid flows are among the potential sources of growth for these economies. However, these economies are yet to demonstrate the capacity to sustain the economic transition. While average productivity levels are high in these three economies, by regional standards, a continuation of their recent poor performance would see standards of living eroding over coming decades.

In FSM and Marshall Islands, dependence on poorly oriented and declining financial support from the United States is a key factor in their development experience. Reasons for the lack of progress in Fiji Islands are harder to pinpoint, but the underlying social and political tensions that have surfaced in four coups over 20 years are likely to be key factors. There may also be reluctance to allow the economy to be led by its comparative advantage and to face the change this can bring. In the Pacific island countries, as elsewhere, growth prospects are best when an economy is allowed to travel its own journey, with appropriate support (but not control) from government.



The 'agriculture, forestry and fishing' economies of Papua New Guinea, Solomon Islands, Vanuatu and Kiribati are by far the most economically disadvantaged of the Pacific island countries. The rate of economic change in these economies is low, as are average income levels. The long period of economic inertia in these countries suggests that the institutional and policy environments are yet to develop the capacity to bring about economic change. The experience of the past 40 years suggests they will remain dependent on agriculture, forestry and fishing for some decades. Even if significant progress is made in expanding other sectors, most of the population will remain reliant on agriculture, forestry and fishing for a long time. For these economies, the best prospects for achieving growth lie in raising the productivity of rural areas.

Notes

- 1 Kiribati is an exception. Its high services share despite its low GDP per head appears to result from an undervaluation of the per head contribution to GDP of subsistence activities and very large offshore income (that helps fund a larger services sector than expected given the level of GDP per head).
- 2 These are Hong Kong, China, and the West Bank and Gaza.
- 3 The need to distinguish between GDP and employment shares is not so important at high income levels, as the GDP and employment shares tend to be similar. For example, in 1994, GDP shares for the member countries of the Organisation for Economic Cooperation and Development were approximately 3 per cent for agriculture, forestry and fishing, 21 per cent for industry and 76 per cent for services. Employment shares in the same year were approximately 5, 21 and 75 per cent, respectively (Australian Productivity Commission 1998:5, 9). In Palau and Cook Islands, services account for 82 per cent and 77 per cent of employment and 82 per cent and 78 per cent of GDP, respectively, in the latest data.
- 4 A potential limitation of calculating industry shares of total employment is the classification of village/subsistence workers, as their classification varies between countries and over time. Examination of employment by industry as a share of the population of working age suggests that the 'true' agriculture, forestry and fishing employment share in Solomon Islands, Vanuatu and Kiribati is likely to be more stable than shown in Figure 2.
- 5 The census data report a large decline in the agriculture, forestry and fishing employment share since 1973. However it is not shown in the figure as the census analytical reports conclude that the rise is overstated (the number of subsistence workers is overstated in 1973 and 1980 relative to later years).
- 6 The coefficient of structural change is discussed in Australian Productivity Commission (1998:69–73). Similar results are derived from the estimation for the Pacific island countries of an alternative measure of structural change, the Lilien Index (Organisation for Economic Cooperation and Development 2002:23; Lilien 1982:787–89).
- 7 By 1990, most employment in Papua New Guinea was (mainly) cash-based. However, the 2000 Census reported this trend was reversed during the 1990s. While Papua New Guinea's next census is required before this turnaround can be clearly understood, the strength of the upward trend in the 30 years to 1990 suggest that the 2000 Census understated cash employment (most probably by adopting a different classification to earlier census). The upward trend is also consistent with the widespread presence of smallholder-based cash crops and other informal activities. For example, the 2000 Census reported that 40 per cent of households were engaged in the growing of coffee, while 15 per cent were growing cocoa, 13 per cent were growing betel nut, and 12 per cent were growing coconuts. The 2000 Census also found that 50 per cent of households were engaged in the sale of food crops/cooked food, while 33 per cent were engaged in the sale of betel



nut/mustard, 19 per cent were selling meat at the market/roadside, 13 per cent were selling handicrafts, and 10 per cent were selling fish (note that households can have more than one activity, PNG National Statistics Office 2000 Census Table Retrieval System).

- ⁸ The reported productivity growth in Solomon Islands may be overstated because the shift out of subsistence employment may be overstated. It is important to note that the productivity measurement is to 1999, and labour productivity fell dramatically after 2000 with the civil unrest.
- ⁹ See OECD (2002:20) and Peneder (2003:432–35) for a discussion of the shift-share analysis technique.
- ¹⁰ There is some uncertainty about this estimate, and if it is removed there is no structural burden.
- ¹¹ This is the case in Kiribati for both the total economy and non-mining economy.
- ¹² In Cook Islands, structural change is estimated to have accounted for a quarter of labor productivity growth in the non-agriculture sector.
- ¹³ The finding that most growth is attributable to intra-sector productivity growth is consistent with shift-share analysis of OECD country growth (OECD 2002:5) and the European Union (Pender 2003:433–36), as well as Asian manufacturing (Timmer and Szirmai 2000). Some attribute this result in part to the potential for shift-share analysis to obscure important changes at the industry or firm level.
- ¹⁴ There are at least four visitors every year per person living in Palau and the Cook Islands. The figure is less than 0.5 in the other Pacific island countries (Secretariat of the Pacific Community 2007).

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