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Investments in Pacific Island Countries: Trends and Special Links

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Investments in Pacific Island Countries: Trends and Special Links

Saia Kami*

SUMMARY

Investments in Pacific island countries have not been high by international standards. The relative strengths (i.e., relative to these island countries' GDPs) of direct allocations of accessible resources to aggregate investments are on the whole quite low. Observed variabilities among investment levels and investment shares in GDPs (called GDP shares) are higher among countries with lower GDP shares and tend to be lower among countries with higher GDP shares. Thus, it is important to maintain careful interpretations of the statistics on the observed inter-temporal behaviors of investments in these island countries.

At least during the second half of the 1980s, many Pacific island countries exhibited no significant investment-linked time-trend effects. Thus, the time-patterns of investments over this period could be adequately represented by appropriately specified levels or GDP shares representing autonomous investments. More specifically, the evidence shows that the underlying levels of investment over time in Pacific island countries such as Papua New Guinea, Fiji, Kiribati, and Solomon Islands have been genuinely sluggish.

Despite this situation, the compounded rates of growth of investment for many Pacific island countries (during 1985-89) were highly (statistically) significant, even though their respective magnitudes were relatively quite small for most of these countries. In other words, many countries showed strong trend links between investment levels (GDP shares) of the "current" periods and those corresponding to the "immediate past" periods. However, the evidence shows that investments in Pacific island countries had not moved

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even in one specific direction; i.e., some estimates of compounded rates are negative while others are positive.

During the late 1980s, some Pacific island countries (Fiji, Papua New Guinea, Western Samoa, and Solomon Islands), on the average, invested at rates lower than their corresponding GDP growth rates. Tonga and Kiribati, on the other hand, invested at rates greater than the rates of growth of their respective GDPs.

During the three year period, 1987-89, deteriorating average rates of growth of real investments in Fiji and Western Samoa, but not Tonga, were evident. The rates for Tonga and Fiji were in fact well below those that had been observed at least for the ten-year period preceding 1987-89. The same applied for the case of Western Samoa at least during the period 1982-89.

Estimated correlative links between investment and output imply the prevalence of different stylized scenarios among the cases of the Pacific island countries. For example, the correlation between the rate of growth of real investment and the rate of growth of real GDP is positive but weak for the case of Fiji. However, in Western Samoa, the observed positive and strong correlation is that between real GDP growth rate at the "current" periods and the investment growth rate at the "immediate past" periods.

Capacity utilization variables (e.g., changes in output levels) are not significant determinants of investment level in the cases of Tonga and Fiji. Thus, for these countries, any attempt to deduce the pattern of investment from the movements of capacity utilization variables is likely to be futile.

Econometrically procured empirical evidence consistently gives credence to the empirical specification that projects investment replacement (at the "current" periods) as equivalent to a simple proportion of the level of capital stock in the "previous" periods. The capital utilization rate is estimated to be about 6 percent for Fiji and about 8 percent for Tonga.

Notwithstanding the above results for Fiji and Tonga, the implied accelerator effect is significant in the case of Western Samoa. This had occurred when changes in output growths "attached" to the accelerator were those associated with a one-year lag. The estimate of the significant accelerator coefficient is negative (actually -0.85), indicating that the aggregate investment level in Western Samoa had been significantly stifled by the increments of growth of GDP in the corresponding "immediate" past periods. This accelerator-link effect seems to explain the apparent sluggishness in both real investment and real GDP experienced by Western Samoa during the 1980s.

The empirical evidence procured also clearly indicates that the said stifling effect in the case of Western Samoa had come from the public sector. In any event, coupled with the

induced (but unknown) effects of the multiplier, fluctuations in economic activity moulded around a sluggish trend, is likely to continue to prevail in Western Samoa.

The significant resource (savings/investment) gaps prevalently experienced by Pacific island countries testify to these countries' continually weak capabilities to master effective savings strategies. Many Pacific island countries (Solomon Islands, Western Samoa, Tonga, and Vanuatu) "rely" considerably on external flows to compromise their resource gaps.

For the cases of Tonga and Fiji (for which appropriate data were available), procured empirical evidence on the aid-savings relationship points to a negative link. In fact, the statistically significant results on Tonga emphatically point to a "crowding-out." That is, aid displaces savings, and this crowding-out effect is very strong. In particular, the relevant empirical evidence means that relative to national income, a 10 percent rise in the growth rate of aid provokes a crowding-out in savings equivalent to the effect implied by a fall in the growth rate of savings, to the tune of 7 percent.

Connections between output, capital, labor, and total factor productivity have been deduced from estimates derived from an ad hoc analysis based on specific variants of the growth-accounting framework, using national accounts data on Fiji and Tonga. Estimates of the appropriate decompositions of the observed average rates of growth of output reveal that: (1) changes in labor inputs dominate the fluctuations in the rate of growth of output in the case of Fiji and (2) in the case of Tonga, however, it is the increases in capital inputs that dominate the variations in output growth rate.

During the period 1985-89 and in the case of Fiji (Tonga), the estimated direct contributions to the realized average growth rate of 2.3 percent (1.4 percent) of output, induced by growth in capital, labor, and total factor productivity, were 10 percent (88 percent), 52 percent (21 percent), and 38 percent (-10 percent), respectively. This means, *inter alia*, that on the average, growth in total factor productivity had stimulated (stifled) the growth in output in the case of Fiji (Tonga). This scenario is more glaring when these results are compared with their counterpart results for the five-year period (1980-85) immediately preceding 1985-89.

In the context of unemployment, the stated empirical results imply that in order for the then prevailing unemployment rate of Fiji to start coming down, Fiji's average growth rate of output must, *ceteris paribus*, be substantially lifted (in order to accommodate for the observed positive effect of growth in total factor productivity). In the case of Tonga, only a relatively smaller rise, *ceteris paribus*, in the rate of growth of output is all that is needed for the prevailing unemployment rate to start declining.

An alternative general perspective for systematically viewing and classifying actual/potential determinants of investments in the Pacific island countries is presented in

this paper. The general perspective revolves around three notions (capacity utilization, internal finance, and external finance), which emphasize intuitively reasonable propositions about objective criteria inherent in investment decisions.

The various rationale underlying these notions are not mutually exclusive. For instance, the rationale for internal finance relies on the view that the cost of financing investment expenditures escalates markedly beyond the point of exhaustion of internal funds (a presumed measure of profits). On the other hand, capacity utilization variables (e.g., output level, capital-output ratio) may act as surrogates for anticipated sales volumes, which may in turn be the best indicator for prospective profitability.

Based essentially on findings/generalizations put forward by others, this paper makes reference to a plethora of factors which have been cited as stimulating/stifling “agents” for investment initiatives/efforts in Pacific island countries generally and/or in well characterized cases.

Furthermore, this paper restates the well recognized stance that for investment to effectively undertake its activist roles in development in Pacific island countries, appropriate environments (especially those at the macroeconomic, institutional, and external modes) need to be fostered and perpetually enhanced. With reference to this stance, this study borrows and uses ideas and information reported by others to substantiate the significance and serviceability of these environments for investment decisions.

The paper concludes by highlighting the point of view that contingent on any set of preferred desiderata, any effort to allocate investible resources consistently requires some quantification to take place. Thus, efforts to operationalize (and satisfactorily quantify) as far as possible, various aspects of the investment decision process, need reinforcing. This, *inter alia*, not only would assist in robustly marshaling the ongoing research success with the identification of actual/potential determinants or stimulating/stifling factors of investment but also would serve to put into context the precise implications of generalizations that have somewhat become a common rhetoric in development plan policies and deliberations regarding investments in the Pacific island countries.

SECTION 0. APPROACH

0.0 The Project Approach to Investment

Pacific island economies have become significantly tied to Asia-Pacific and European economies and more intimately with those of New Zealand and Australia. The consequent “openness” in these island economies--reinforced by their smallness--has thus become a strong force in marshaling additional ramifications of long-recognized constraints to development. Never before has economic development and its drive for up-lifted living standards among Pacific island countries needed to give greater attention to sound investment planning. In the sphere of present-day trade and economic forces, the key issue is: the improved and effective use of investment.

In one perspective, efficacy and efficiency in the inter-temporal use of investment are somewhat implicit in the observed pattern of investment itself. The task of disentangling these implicit influences is difficult. The principal reason being that there exists a host of factors that mold the genuine determinants of investment. Hence, efficacy and efficiency elements central to this molding process in turn influence the efficacy and efficiency of investment itself, and the relationship between the two is by and large complex.

Despite this situation, a productive approach for studying principal investment-related issues, which merits continuing use and generates considerable benefits and useful insights, is that which focuses attention on the experiences of Pacific island economies in their dealings with alternative configurations of investment choices. In one defined perspective, properly characterizing the constraints encountered via project and program-based experiences, can lead to robust discriminations of alternative investment set-ups based on practically attractive criteria. In this context, properly collected and serviced data on investment related parameters implicitly contain invaluable information on past experiences. Thus, their tapping as far and as fast as possible and proper analysis at relevant levels of aggregation would serve to tell a story about experiences with specific investment decisions--an effort that is renowned for its great serviceability.

Particularly suitable for this experience-based approach is the so-called “Project Approach to Investment,” which in its broadest context is followed and taken to mean by the World Bank as:

The approach (which) comprises analyses and decisions at the national level, where projects are aggregated into a national investment plan and a framework of macroeconomic policies is put in place; at the sector level, where sector investment strategies and priorities, along with supporting policies, are elaborated; and at the project level, where specific projects are identified, prepared, and implemented (Baum and Tolbert 1985:5).

Within its pre-set limits in terms of scope and coverage, this paper addresses the subject of “Investment in Pacific Island Countries” under the general umbrella of the “Project Approach to Investment.” Moreover, the study takes as a basic premise the view that substantial variations exist in investment practice, management, performance, and prospects among Pacific island countries.

The importance of this variability factor is most telling at the project level for two reasons: (1) the greater heterogeneity of the associated microeconomic environments and (2) the marked significance at this level of the interaction effects (in addition to the individual main effects) of constraints/stimulants to effective and improved use of investment. Nevertheless, the efficacy and efficiency of investment projects further critically rely on how facilitating and enhancing, the multi-dimensional environments are within which the producing units exist and entrepreneurs make their investment decisions.

0.1 The Investment Concept

The term “investment,” as henceforth adopted, coincides with the concept of “gross domestic investment” or “gross capital formation.” It is that part of output that is not utilized in current consumption. At the aggregate level, principal components of gross domestic investment are plants and equipment, machines and distributive facilities, tools and instruments--all the various forms of real capital that greatly enhance the efficacy of the productive process. Also included in gross domestic investment are changes in stocks and appropriate measures of “work-in-progress.”

When changes in stocks and work-in-progress are netted out from gross domestic investment (gross capital formation), the resultant measure is gross fixed investment (gross fixed capital formation)--referred to in brevity as “fixed investment.”

0.2 National Investment Plans

Development Plans of widely varying scopes and emphases have been formulated by Pacific island countries. In these plans, indicative targets and measures designed for guiding investment choices occupy a priority place. Particular attention has been directed to the formulation of public investment programs and the putting into place of a sound investment-inducing macroeconomic policy framework. In the more detailed plans, the deliberations have incorporated analyses of industry/sector performances and individual projects with special focus on relevant policies, issues, and investment priorities.

In these plans, the thrust of the rhetoric has been unequivocal--to promote the efficient use of scarce resources for productive purposes and to foster equity in the distribution of

income and other development-generated benefits. Despite this thrust, substantial differences exist among Pacific island countries, in the extent to which strategies embraced under formal planning have been heeded to in practice. In this regard, the underlying causes and rationale seem also to differ significantly.

In the Kiribati economy, the shortfall in “target” growth performance is largely due to the volatility and vulnerability emanating from the country’s harsh physical environment (characterized by remoteness, smallness, highly dispersed island distribution with restricted and poorly endowed land-based resources, and frequent unfavorable weather patterns of unpredictable tenacity). At the “other end” of the spectrum, however, marked lapses in the recent growth performance of the Papua New Guinea economy, have been to a great extent caused by unexpected shocks, e.g., cessation of the Bougainville mine operation, drastic declines in agricultural export prices and a further deterioration in investment confidence (due for instance, to an observed worsening situation of law and order).

To a non-trivial extent, development plans or parts thereof in some island countries have lacked the necessary political backing, and thus their value (if any) has been somewhat restricted to ceremonial ends and/or the satisfying of exogenous interests. Declarations abound of the need for close private-public sector partnership in the design and implementation of a long-term investment strategy, as well as the execution of tangible actions. Also prevalent, are the formal plans for substantially scaling down the operations of the public sector and for significantly eliminating measures that are encouraging direct interventions and/or inducing price distortions, thus facilitating the operations of unhindered markets and their self-generated price signals to guide investment.

On these fronts alone, the persistent marked discrepancies between formal plans and what have been observed in reality can only be relieved through political will and commitment. Moreover, given the principal means most Pacific island economies have persistently relied upon for financing their resource (savings/investment) gaps, potential avenues exist for donors of external inflows to catalyze initiatives and/or influence the pace through which necessary changes could take place.

0.3 Investment-oriented Macroeconomic Policies

Regardless of how successful they are effectively pursued in practice, a number of macroeconomic policies or stylized macroeconomic targets aimed categorically at streamlining, stimulating, and effectively directing investment efforts have been advocated in the budget-based agenda and national planning of Pacific island countries. These include the following:

Engagement in long-term structural reform programs--which mobilize measures to improve international competitiveness (e.g., the real exchange rate depreciations effected in the late 1980s by Fiji and in 1990 by Papua New Guinea and the recent pursuance of labor market deregulation measures in Fiji to achieve appropriate [market-clearing] adjustments in real wages).

Efforts to restrain government expenditures, thus streamlining the use of scarce resources and contributing positively to the containing of inflationary pressures.

Promotion of export-oriented growth in the private sector (e.g., via appropriate tax reforms such as [in the case of Fiji] the diversion of taxes away from international trade, especially with regard to imported production inputs toward more consumption-based activities and the development [as in the case of Tonga] of high value agricultural products such as vanilla and squash exclusively for exports).

Promotion of an environment of external and internal price stability (e.g., by containing fiscal deficits and domestic liquidity and by exercising measures that target greater wage restraint).

Promotion of domestic/national savings (examples include the efforts to move toward a structure of competitive interest rates and to encourage flows of remittances, e.g., the introduction of "Return to Tonga" savings accounts by the Bank of Tonga).

The reduction of regulatory impediments to foreign investments (e.g., the enhancing role of the "one stop shop" set-up and the reinforcing of the efficient operations of relevant institutions among which the recently established "Investment Promotion Authority" of Papua New Guinea may serve as a role model).

The undertaking of microeconomic reforms that facilitate long-term measures for an appropriate regulation of the competitive environment and, coupled with appropriate fiscal reforms, minimize market distortions and improve the efficacy of investment-oriented cost-cutting based incentives.

The strengthening (via the use of appropriate incentive schemes) and encouraging of financial institutions including non-banks such as National Provident Funds to channel, via specially tailored schemes, more financial inputs to the productive sectors.

The identification of potentially productive domains within which the prospects of profitability and comparative advantage are realistically high.

The mobilizing of a wide range of community-based investment-stimulating factors, including the reorienting and reinforcing of appropriate sector policies (e.g., policies for reinforcing law and order) in order to facilitate or enhance the controlled expansion of investment.

Papua New Guinea: An objective and fair view of how government development policies determine and mould development in Pacific island economies may be gained from the experiences of Papua New Guinea as described by Coulter (1990).

Papua New Guinea exhibited rapid economic growth in the 1960s (averaging a real annual growth in GDP of around 6.5 percent); however, its performance during the 1970s and early 1980s has been disappointing. In fact, observed declining growth rates were linkable to changes in development policy emphasis and mix. For instance, export promotion and growth-pushed strategies (e.g., increased food and cash cropping and improved agricultural practices) dominated development policy in Papua New Guinea in the 1960s and early 1970s.

These growth-oriented commitments were, however, substantially diluted in the mid-1970s and early 1980s. The advent of self-government and independence had seen the development policy scope being widened to give unprecedented weight to the goals of localization, greater local ownership and control, income distribution, and political decentralization. However, clearly evident since the mid-1980s are signs of a re-shift in the development focus and policy emphasis toward robust economic growth.

SECTION 1. INVESTMENTS: TRENDS, CORRELATIVE PATTERNS, AND SPECIAL CONNECTIONS

1.0 Relative Significance and Trends

Relative Significance

Investments in Pacific island economies have not been high by international standards. Measured in terms of investment's share in Gross Domestic Product (GDP),¹ Fiji's average figure for the period 1985-89 is a mere 18 percent. Over the same period, the corresponding average for Papua New Guinea is only 22 percent, while a more respectable average GDP share of about 31 percent is applied rather uniformly to Tonga, Kiribati, and Western Samoa (see Table 1).

The patterns of the observed variabilities of these estimates of (standardized) investments are also noteworthy. The three countries (Tonga, Kiribati, and Western Samoa), which display the more respectable investment-GDP shares, also display the least order variabilities (the corresponding estimated coefficients of variation (CV),² are between 6 and 8 percent), while Fiji and Papua New Guinea with their markedly lower levels of standardized investments display a markedly higher degree of variability (their estimated CVs are, for both countries, about 13 percent). Based on these yardsticks, Solomon Islands with an estimated GDP share of 2.8 percent and with a markedly higher estimated CV of 19 percent seems to warrant separate recognition.

The summary statistics referred to above offer on their own a general characterization of the five Pacific island countries considered in this section. In a way, such a characterization leads to a systematic basis for partitioning these countries into three groups: viz. Solomon Islands to be viewed separately, Papua New Guinea and Fiji as one group, and Tonga, Kiribati, and Western Samoa to constitute a third group. In a general perspective, despite the somewhat "mechanic" basis behind the said partitioning, the resulting groups may be seen to be intuitively reasonable in light of other characterizing socioeconomic factors. (If this generalization carries significant content validity, then it offers serviceable implications on the extent of applicability and generality that could be attached to interesting country-based empirical findings.)

¹ That is, measured in terms of observed average investment-output ratio expressed in percentage form.

² CV is the ratio of Standard Deviation to Mean of the estimate, expressed in percentage form.

Table 1. Summary Measures of Investment-Output Ratios: Selected Pacific Island Countries (Average for 1985-89)

Country	Mean	Standard Deviation	Minimum	Maximum
Papua New Guinea	0.222	0.029	0.200	0.270
Fiji	0.176	0.022	0.158	0.201
Solomon Islands	0.281	0.054	0.225	0.371
Tonga	0.311	0.019	0.295	0.344
Kiribati	0.311	0.024	0.283	0.340
Western Samoa	0.318	0.021	0.287	0.338

In any event, the summary statistics of Table 1 support the notion that the relative strength of the direct allocation of accessible resources to aggregate investment (i.e., relative to GDP) is low.³

In absolute terms, the average yearly levels of investment over the 1985-89 period for the Pacific island countries cited above are given in Table 2. However, due to differing basis of valuation, the serviceability of these statistics for comparative viewing is quite limiting.⁴

A more useful set of statistics for comparative inspections of absolute levels of investment is that given in Table 3. In terms of U.S. dollars, average yearly investments over the period, 1985-89 amount to about 199 million for Fiji, 33 million for Western Samoa, and 24 million for Tonga; for Solomon Islands, and Vanuatu the average levels are 51 and 43 million, respectively.

Trends

At least three dimensions of trend in investment may offer insightful perspectives on investment behavior. The first is the trend in the inter-temporal behavior of the (absolute) level of investment; the second is the trend of the time pattern of investment's share in GDP (the "standardized" relative significance of investment); and the third perspective is linked to the growth rate of investment.

³ The argument carries a heavier weight than it may appear at face value. This is because the conventional national accounting model, on one hand, does not provide an estimate of investment (gross capital formation) that is independent of imports contribution, but such a contribution, on the other hand, is netted out before arriving at the GDP estimate. Thus, investment as so measured is not strictly a sub-set of the GDP measure. This implies in the present analytical context an even lower real relative empirical significance.

⁴ Inter-country comparisons based on statistics reported in Table 2 are difficult because the estimates are based on local-currency valuation. Moreover, the usefulness of any comparative inspection, is further hampered by the fact that these statistics are given in current market prices--that is, the differential inflation *cum* indirect taxes effects are inherent in the reported estimates.

Table 2. Summary Measures of Levels of Aggregate Investment and Output: Selected Pacific Island Countries (Average for 1985-89, Current Market Prices)

Country	Monetary Unit	Mean	Std. Dev. ^a	Min. ^b	Max. ^c
Papua New Guinea	Kina\$m				
GDP		2793.0	301.8	2424.0	3141.1
Investment		626.3	148.3	484.8	848.1
Fiji	F\$m				
GDP		1538.5	204.5	1316.5	1861.4
Investment		272.3	58.2	234.4	373.8
Solomon Islands	SI\$m				
GDP		304.9	65.3	234.7	384.4
Investment		87.1	31.3	62.2	132.1
Tonga	T\$m				
GDP		103.3	15.5	80.0	121.5
Investment		31.9	3.3	27.5	35.8
Kiribati	A\$m				
GDP		39.3	5.8	32.8	46.5
Investment		11.6	1.0	10.3	12.5
Western Samoa	Tala\$m				
GDP		222.5	21.8	196.0	248.4
Investment		70.9	10.5	59.7	83.1

a. stands for "Standard Deviation"

b. Stands for "Minimum"

c. Stands for "Maximum"

Based on national accounts data for the period 1985-89 for selected Pacific island countries, estimates of trends under the first two perspectives were obtained (see Tables 4 and 5). These estimates were procured based on three standard trend models: (1) The Linear Trend Model--where the trend estimate inherits the pre-condition that investment has grown in constant absolute amount; (2) The Exponential Growth Trend Model--where the trend estimate inherits the pre-condition that investment has grown in constant percentage increment; and (iii) The Logarithmic Auto-regressive Trend Model--where the trend estimate, represents the compounded rate of growth of investment.⁵

The trend estimates derived under the above-described dimensions/models (Tables 4 and 5) convey the following messages:

a. Investment (Absolute) Levels

- i. Apart from the cases of Tonga and Western Samoa, the trends in the absolute levels of investment in Pacific island countries are not consistent with two notions: (a) investment level is on the average growing in constant absolute terms; and (b) investment level is on the average growing in constant percentage increments.

⁵ This interpretation is strictly true when the associated constant term is forced to be identically zero.

Table 3. Gross Domestic Investment and its Component Sources of Finance (Average for 1985-89, Current Prices, US\$million)

	Fiji	Solomon Islands	Western Samoa	Vanuatu	Tonga
1. Net exports of goods and services	-17.3	-47.4	-40.6	-34.0	-29.8
1.1 Net exports of goods and NFS ^a	13.3	-40.1	-40.1	-30.8	-33.4
1.1.1 Net exports of merchandise goods	-106.5	-9.8	-42.9	-40.3	-30.6
1.1.2 Net exports of NFS ^a	119.8	-30.3	2.8	9.5	-2.8
1.2 Net factor income received	-31.1	-7.0	-0.2	3.2	3.6
2. Gross national saving	195.4	35.9	40.7	47.3	21.8
2.1 Gross domestic saving	211.9	11.0	-7.9	11.8	-9.9
2.2 Net current transfers received	14.5	31.9	48.8	38.8	28.1
2.2.1 Net private transfers	-10.5	-0.6	33.5	7.0	21.6
2.2.2 Net official transfers	25.2	32.4	15.3	31.8	6.5
2.3 Net factor income received	-31.1	-7.0	-0.2	-3.2	3.6
3. Gross domestic investment	198.6	51.1	32.5	42.5	23.5
4. Net capital inflow (3-2) ^b	3.3	15.2	-8.2	-4.8	1.7
5. Net inflow of external resources ^c (3.- 2.1)	-13.3	40.1	40.4	30.8	33.4

a. Stands for "Non-Factor Service"

b. Also equals the negative of the balance in the Balance of Payments' current account.

c. Sometimes referred to as "Resource (Savings/Investment) Gap."

Sources: The World Bank (1991); National Centre for Development Studies (1991)

- ii. The lack of statistical significance in the trend estimates derived under the presumed conditions of constant absolute and constant percentage increases in investment means that the underlying levels of investment expenditures over time in Pacific island countries, such as Papua New Guinea, Fiji, Kiribati, and Solomon Islands, have been genuinely sluggish.
- iii. The (trend) estimates representing the compounded rates of growth of investment are highly significant for all countries under consideration. Investments have grown at compounded rates of growth of about 2 percent for many Pacific island countries (Fiji, Tonga, and Western Samoa). For Papua New Guinea, the trend estimate is a mere 1 percent; the cases of Solomon Islands and Kiribati in fact exhibit relatively greater (3 percent) trend effects.

Table 4. Estimates of Trends of Observed Investment (Absolute) Levels: Selected Pacific Island Countries, (Reference Period: 1985-89, Valuation Basis: Current Market Prices)

Country	Monetary Unit ^a	Linear Trend	Exponential Growth	Logarithmic Autoregressive
		Model ^b	Trend Model ^c	Trend Model ^d
Fiji	F\$m	21.46 (1.24)	0.067 (1.142)	1.018** (44.121)
Kiribati	A\$m	0.57 (1.57)	0.050 (1.584)	1.026** (33.314)
Papua New Guinea	Kina\$m	75.39 (2.34)	0.122 (2.734)	1.013** (55.482)
Solomon Islands	SI\$m	15.75 (2.28)	0.180 (2.621)	1.029** (23.622)
Tonga	T\$m	2.06** (19.02)	0.065** (14.586)	1.019** (287.860)
Western Samoa	Tala\$m	6.37 (5.69)	0.091 (5.271)	1.019** (89.031)

Note: Figures in parentheses represent associated t-ratio statistics; * and ** represent statistical significance at the 5 percent and 1 percent levels, respectively.

- The relevant "monetary unit" is needed for the interpretation of the estimates generated under the Linear Trend Model.
- It assumes that investment grows in constant absolute amount each time period.
- It assumes that investment grows with constant percentage increase in each time period.
- The "Nonconstant" version gives the compounded rate of growth of investment.

Table 5. Estimates of Trends of Investment-output Ratios: Selected Pacific Island Countries (Reference Period: 1985-89)

Country	Linear Trend Model ^a	Exponential Growth Trend Model ^b	Logarithmic Autoregressive Trend Model	
			Constant	Nonconstant ^c
Papua New Guinea	0.013 (1.6683)	0.058 (1.814)	0.225 (0.358)	0.972** (17.748)
Fiji	-0.001 (-0.174)	-0.010 (-0.226)	-0.261 (-0.525)	0.989** (18.010)
Solomon Islands	0.014 (0.757)	0.045 (0.737)	-0.345 (-0.525)	0.963** (7.380)
Tonga	-0.010 (-2.226)	-0.030 (-2.260)	0.063 (0.282)	1.031** (38.944)
Kiribati	-0.013 (-1.382)	-0.042 (-1.440)	0.264 (0.158)	1.030** (20.337)
Western Samoa	0.009 (1.614)	0.029 (1.596)	-0.049 (-0.064)	0.978** (21.826)

Note: Figures in parentheses represent associated t-ratio statistics; * and ** represent statistical significance at the 5 percent and 1 percent levels, respectively.

- It assumes that investment grows in constant absolute amount in each time period.
- It assumes that investment grows with constant percentage increase in each time period.
- The "Nonconstant" version gives the compounded rate of growth of investment.

- iv. The results reported in (i)-(iii) above project the point that while any asserted trend in investment (absolute level) behavior over time is of trivial significance, a trend effect exists that is quite strong when the perspective considered is how the absolute level of investment in one period is comparatively linked to the level of the previous period.

This interpretation is more obvious when it is noted that the results described in (iii) above (i.e., for estimates under the “Logarithmic Auto-regressive Trend Model”) are interpretable as elasticities, i.e., elasticities between investment in the current period and investment in the immediate past period.

b. Investment's Share in GDP

- i. Consider the trend estimates based on the presumption of either constant absolute level growth or constant percentage growth in the observed investment-GDP ratios of Pacific island countries. The results of Table 5 clearly convey that estimates of empirical trends under these conditions are of trivial importance (statistically insignificant) and that this empirical result uniformly applies to all the Pacific island countries considered.
- ii. Among all the Pacific island countries considered, the observed investment-output ratios for given periods have, on the average, strong trend links to the ratios of the immediate past periods. The associated compound rates of growth are highly (statistically) significant; their signs, however, are not the same for all countries (i.e., some estimates are negative while others are positive).⁶
- iii. Estimates of compounded rates of growth of observed investment-GDP ratios are negative for Papua New Guinea (-3 percent), Fiji (-1 percent), Western Samoa (-2 percent), and Solomon Islands (-4 percent). However, for Tonga and Kiribati, the associated compounded rates of growth are both positive and both amount to about 3 percent.

There is a further interesting inference drawable from a viewing of the combined effects of the two specific stylized findings summarized in (a[iii]) and (b[iii]) above. This is about the inferred compounded rates of growth of the absolute levels of GDP--the said average compounded growth rates of GDP must be significantly higher than their counterpart rates for the absolute levels of investment; this stylized result applies equally to the cases of Papua New Guinea, Fiji, Western Samoa, and Solomon Islands.⁷

⁶ Recall that in dealing with compounded rates of growth estimates, the conventional growth-rate interpretation is applied to the difference between the relevant estimate (column 4 of Table 5) and unity.

⁷ The argument readily follows from the simple deduction that if I exhibits a positive growth rate, but the ratio, I/Y, exhibits a negative growth rate, than Y must be growing at a faster (positive) rate than I.

Moreover, in the cases of Tonga and Kiribati (where both the compounded rates of growth associated with the absolute levels of observed investment and observed investment-GDP ratios, are positive), the inferred compounded rates of growth of the absolute levels of GDP must be significantly lower than the counterpart rates of the corresponding absolute levels of investment.

Based on the above results, we make the following generalizations:

- In the late 1980s, a number of Pacific island countries (e.g., Fiji) favored investing (on capital formation) at rates lower than what their GDP growth rates in a context of historical experience would have dictated.⁸
- Tonga and Kiribati have effected investments at rates greater than the rates of growth of their GDPs.
- The advent of more rigorous stylized results (especially about casual connections) are hampered by lack of sufficiently long time series on real investment and real GDP (measured at factor cost) and on variables (measured in real terms) with known/suspected significant influences on investment and output.

c. Growth Rates of Real Investment

The following discussion focuses on Fiji, Tonga, and Western Samoa; the relevant empirical results utilized are based on measures of aggregate flows/stocks in real terms and are summarized in Tables 6 and 7.

Over the most recent five-year period (1985-89) for which appropriate data are available, the prevailing average rates of annual growth of real investments in Fiji and Tonga are small and negative (about -1 percent for Tonga and a rate of very near zero in the case of Fiji).⁹ Western Samoa, however, records a relatively healthy average growth rate of about 3 percent over the same period.

However, over the latest three-year period (1987-89) of the 1980s, deteriorating rates of growth of real investments in Fiji and Western Samoa but not Tonga are evident. For both Fiji and Western Samoa, a -3 percent rate underlies real investment growth; while for Tonga it is an average of (positive) 1 percent.

⁸ Note that the underlying empirical evidence does not (necessarily) imply that higher levels of capital productivity were realized during this period.

⁹ The estimate for Fiji is -0.000, which means a negative average with a very near zero value, even after rounding.

On the basis of measured average annual growth rates *per se*, the efforts of Fiji and Tonga regarding real investment in the late 1980s are substantially well below those that had occurred in these countries at least 10 years before. The same argument applies to Western Samoa, except that the relevant evidence is confined only to the period 1982-89.

Fiji: Annual real investment rate averaged 6 percent during 1970-75; it jumped to an even healthier average rate of 10 percent during 1975-80; since then, average real investment rate has been deteriorating (Table 6).

Tonga: During the period 1975-80, real investment grew at an average annual rate of 2 percent; however, this average growth rate dropped dramatically to a very low -5 percent magnitude during 1980-85. Since then, however, the average annual real rate of investment has grown at a more encouraging rate (Table 7).

Western Samoa: The real investment experience toward the end of the 1980s, (see Table 8) represented a marked deterioration in the effort to reinforce, if not sustain, the healthy and reasonably robust rates of real investment growth, achieved in the earlier part of the 1980s.

1.1 Investment-output Link

The tangible relationship (if any) between investment and output plays a presumed central role in strategies designed to propel economic development in the Pacific island countries. Due to a paucity of appropriate data and statistics, we shall address in this paper only a few of the relevant principal issues. We first consider two questions:

1. Do patterns in investment akin in some manner to variations in output?
2. How significant is the effect of growth in output upon the level of investment in Pacific island countries?

Some objective answers to the first question may be gained by conducting correlative analysis. An informative response to the second question may be gauged within the so-called flexible accelerator model.¹⁰

¹⁰ Built on the accelerator model of Clark (1917), the flexible accelerator model of investment was originated by Chenery (1952) and Koyck (1954).

Table 6. Summary Measures of Growth Rates of Real Investment and Key Macroeconomic Variables: the Case of Fiji

Variable	Mean	Std. Dev. ^a	Min. ^b	Max. ^c
GDP growth rate:				
1970-89	0.038	0.062	-0.066	0.132
1970-75	0.042	0.071	-0.050	0.119
1975-80	0.049	0.056	-0.018	0.122
1980-85	0.013	0.061	-0.042	0.084
1985-89	0.049	0.083	-0.070	0.132
1987-89	0.099	0.047	0.066	0.132
Investment rate:				
1970-89	0.017	0.128	-0.281	0.201
1970-75	0.063	0.096	-0.103	0.129
1975-80	0.101	0.073	0.010	0.201
1980-85	-0.098	0.126	-0.281	0.060
1985-89	-0.000	0.143	-0.151	0.147
1987-89	-0.029	0.174	-0.152	0.094
Capital stock rate:				
1970-89	0.027	0.017	0.003	0.059
1970-75	0.029	0.005	0.024	0.035
1975-80	0.042	0.013	0.028	0.058
1980-85	0.024	0.021	0.007	0.059
1985-89	0.007	0.005	0.003	0.014
1987-89	0.004	0.001	0.003	0.005
Domestic saving rate:				
1970-89	0.058	0.213	-0.257	0.484
1970-75	0.141	0.282	-0.167	0.484
1975-80	0.094	0.205	-0.252	0.248
1980-85	-0.078	0.157	-0.257	0.158
1985-89	0.079	0.179	-0.136	0.258
1987-89	0.026	0.230	-0.136	0.189
National saving rate:				
1970-89	0.069	0.214	-0.312	0.473
1970-75	0.188	0.233	-0.116	0.473
1975-80	0.118	0.257	-0.312	0.345
1980-85	-0.095	0.149	-0.263	0.077
1985-89	0.066	0.114	-0.085	0.193
1987-89	0.078	0.000	0.078	0.078
Aid rate:				
1970-89	0.049	2.710	-7.244	7.864
1970-75	-0.163	0.524	-0.794	0.348
1975-80	1.481	3.594	-0.603	7.864
1980-85	0.443	1.913	-0.569	3.856
1985-89	-1.969	3.522	-7.244	0.011
1987-89	-3.617	5.130	-7.244	0.011

a. Stands for "Standard Deviation"

b. Stands for "Minimum"

c. Stand for "Maximum"

Table 7. Summary Measures of Growth Rates of Real Investment and Key Macroeconomic Variables: the Case of Tonga

Variable	Mean	Std. Dev. ^a	Min. ^b	Max. ^c
GDP growth rate:				
1975-89	0.037	0.053	-0.087	0.136
1975-80	0.035	0.012	0.015	0.046
1980-85	0.052	0.089	-0.087	0.136
1985-89	0.020	0.025	-0.017	0.035
1987-89	0.010	0.037	-0.017	0.035
Investment rate:				
1975-89	0.030	0.142	-0.145	0.363
1975-80	0.108	0.205	-0.134	0.363
1980-85	-0.049	0.103	-0.145	0.122
1985-89	-0.013	0.044	-0.051	0.051
1987-89	0.011	0.057	-0.030	0.050
Capital stock rate:				
1975-89	0.059	0.026	0.027	0.105
1975-80	0.862	0.019	0.056	0.105
1980-85	0.052	0.008	0.042	0.062
1985-89	0.030	0.003	0.027	0.034
1987-89	0.030	0.003	0.027	0.031
Domestic savings rate:				
1975-89	-0.716	2.608	-5.783	4.364
1975-80	0.019	2.462	-1.700	4.363
1980-85	-0.078	3.480	-5.783	2.095
1985-89	0.066	0.661	-0.492	0.969
1987-89	0.306	0.938	-0.357	0.969
National savings rate:				
1975-89	0.074	0.381	-0.410	0.758
1975-80	0.086	0.382	-0.410	0.577
1980-85	0.093	0.483	-0.315	0.758
1985-89	0.036	0.349	-0.403	0.412
1987-89	-0.108	0.419	-0.404	0.188
Aid rate:				
1975-89	-0.446	2.006	-3.240	5.211
1975-80	-0.516	1.552	-3.240	0.454
1980-85	0.361	2.800	-1.764	5.211
1985-89	-1.362	1.251	-2.439	-0.476
1987-89	-1.488	1.345	-2.439	-0.537

a. Stands for "Standard Deviation"

b. Stands for "Minimum"

c. Stands for "Maximum"

Table 8. Summary Measures of Growth Rates of Real Investment and Real Output: the Case of Western Samoa

Variable	Mean	Std. Dev. ^a	Min. ^b	Max. ^c
GDP growth rate:				
1982-89	0.020	0.030	-0.017	0.063
1985-89	0.015	0.024	-0.001	0.051
1987-89	-0.001	0.000	-0.001	-0.000
Investment rate:				
1982-89	0.041	0.137	-0.106	0.284
1985-89	0.026	0.100	-0.056	0.182
1987-89	-0.032	0.035	-0.056	-0.007
Private investment rate:				
1982-89	0.068	0.182	-0.159	0.317
1985-89	0.047	0.195	-0.159	0.224
1987-89	0.022	0.256	-0.159	0.203
Public investment rate:				
1982-89	0.036	0.135	-0.113	0.277
1985-89	0.024	0.095	-0.049	0.160
1987-89	-0.041	0.011	-0.049	-0.033
Subsistence value added rate:				
1982-89	0.009	0.029	-0.026	0.053
1985-89	0.013	0.039	-0.026	0.053
2987-89	0.007	0.046	-0.026	0.039
Agriculture value added rate:				
1982-89	0.008	0.087	-0.094	0.143
1985-89	0.022	0.117	-0.094	0.143
1987-89	0.003	0.137	-0.094	0.100
Manufacturing value added rate:				
1982-89	0.036	0.096	-0.103	0.182
1985-89	-0.010	0.063	-0.103	0.033
1987-89	-0.044	0.084	-0.103	0.016
Service value added rate:				
1982-89	0.038	0.027	0.000	0.086
1985-89	0.038	0.015	0.017	0.052
1987-89	0.034	0.025	0.017	0.052

a. Stands for "Standard Deviation"

b. Stands for "Minimum"

c. Stands for "Maximum"

Correlations

Without implying any causative connections, we estimate the statistical correlations¹¹ between relevant measures for selected Pacific island countries. The principal focus is on the degree of closeness in the exhibited variations between two reference measures.¹²

¹¹ The simple Neyman-Pearson correlation coefficient, (r) is the statistic computed; thus estimates of r , take values between +1 and -1; at which extremes, there is perfect correspondence between the two sets of variations.

¹² Our treatment of this question is effectively descriptive/qualitative, hence, no objective tool for addressing "closeness" has been adopted.

a. Aggregate Investment and GDP

Generally, the patterns of correlations between investment growth rates and GDP growth rates among a number of Pacific island countries are not homogeneously determinate, in terms of both their sign-effects and their relative strengths.

Fiji: The correlation between the rates of growth of real investment and rates of growth of real GDP, is positive but quite weak (Table 9).

Tonga: There is a strong negative (-0.9) correlation between real growth rate and real investment rate for the period 1985-89; however, over the 15 year period 1975-89 the correlation is positive, albeit quite weak (0.1) (Table 10).

Western Samoa: Based on current period flows, real GDP growth rate displays a negative correlation with real investment growth rate. However, when the correlative link considered is between real GDP growth rate at the current period and the real investment growth rate of the immediate past period, the estimated coefficient (0.9) clearly indicates that not only is the correlation positive but also it is quite strong (see Table 11).

Papua New Guinea:¹³ Unlike the case of Western Samoa, GDP levels and growth rates at the current periods show stronger (positive) correlations, with the levels and growth rates of fixed investment of the current periods rather than those of the immediate past period (see Tables 12 and 13). Strong evidence exists of positive correlations between levels of fixed investment in “Agriculture” and “Industries” and the value added contributions (to GDP) of these industries (in both cases, the associated estimates are both about 0.8).

b. Investment and Output: Industry/Sector Levels

On the basis of available relevant national accounts data, we estimate the relative strengths of correlative links, between value added contributions and fixed investments, among selected industries in Papua New Guinea (see Tables 12 and 13). Moreover, we estimate similar (correlative) links, between selected value added contributions and investments in the Private and Public sectors, of the economy of Western Samoa. (See Table 11).

¹³ Note that in the case of Papua New Guinea, fixed investment (gross capital formation less change in stocks) is our adopted investment measure (see Section 0.1).

Table 9. Summary Measures of Correlative Links Among Investment and Key Macroeconomic Variables: the Case of Fiji

Correlates	GDP rate	Investment rate	Capital stock rate	Domestic savings rate	National savings rate	Aid rate
1970-89						
GDP rate	1.000					
Investment rate	0.360	1.000				
Capital stock rate	0.122	0.476	1.000			
Domestic savings rate	-0.174	0.259	-0.012	1.000		
National savings rate	0.008	0.312	0.032	0.905	1.000	
Aid rate	-0.116	0.263	0.397	-0.292	-0.473	1.000
1985-89						
GDP rate	1.000					
Investment rate	0.050	1.000				
Capital stock rate	-0.366	0.610	1.000			
Domestic savings rate	-0.105	0.988	0.669	1.000		
National savings rate	0.726	0.644	0.336	0.532	1.000	
Aid rate	-0.664	0.696	0.590	0.794	-0.090	1.000

Table 10. Summary Measures of Correlative Links Among Investment and Key Macroeconomic Variables: the Case of Tonga

Correlates	GDP rate	Investment rate	Capital stock rate	Domestic savings rate	National savings rate	Aid rate
1975-89						
GDP rate	1.000					
Investment rate	0.142	1.000				
Capital stock rate	0.097	0.577	1.000			
Domestic savings rate	0.250	-0.150	-0.016	1.000		
National savings rate	0.500	0.591	0.282	-0.052	1.000	
Aid rate	0.409	0.357	0.340	-0.164	0.375	1.000
1985-89						
GDP rate	1.000					
Investment rate	-0.923	1.000				
Capital stock rate	-0.238	-0.087	1.000			
Domestic savings rate	-0.954	0.766	0.437	1.000		
National savings rate	0.892	-0.670	-0.412	-0.979	1.000	
Aid rate	0.505	-0.732	0.143	-0.251	0.065	1.000

Papua New Guinea: The correlative links between fixed investments and value added contributions of the industries, "Mining," "Agriculture," and "Industries," are more intuitively plausible and stronger when the measures of fixed investment used in the analysis are based on those of the current periods (instead of those of the immediate past period).

Table 11. Summary Measures of Correlative Links Between Growth of Real Investment and Key Real Output Variables: the Case of Western Samoa

Correlates	Aggregate investment rate		Private investment rate		Public investment rate	
	Current	Lag 1 period	Current	Lag 1 period	Current	Lag 1 period
(a) 1982-89						
GDP rate	-0.490	0.889	-0.486	0.570	0.464	0.930
Subsistence value-added rate	-0.131	0.514	0.052	0.348	0.169	0.526
Agriculture value-added rate	-0.145	0.533	0.037	-0.361	-0.182	0.545
Manufacturing value-added rate	-0.426	0.447	-0.520	0.215	-0.382	0.492
Service value-added rate	-0.633	0.083	-0.322	-0.263	-0.686	0.181
(b) 1985-89						
GDP rate	0.057	0.874	-0.293	0.382	0.201	0.963
Subsistence value-added rate	-0.251	0.749	0.083	0.265	-0.345	0.821
Agriculture value-added rate	-0.245	0.753	0.081	0.265	-0.337	0.827
Manufacturing value-added rate	0.187	0.303	-0.563	0.311	0.473	0.263
Service value-added rate	0.359	0.179	0.732	-0.460	0.143	0.395

Table 12. Summary Measures of Correlative Links Between Levels of Fixed Investment and Key Output Variables: the Case of Papua New Guinea (Reference Period: 1985-89)

Correlates	Aggregate fixed investment		Mining fixed investment		Agriculture fixed investment		Industries fixed investment	
	Current	Lag 1 period	Current	Lag 1 period	Current	Lag 1 period	Current	Lag 1 period
GDP	0.910	0.636	0.880	0.675	0.749	0.581	0.850	0.279
Mining value-added	0.547	0.091	0.476	-0.043	0.796	0.422	0.536	-0.507
Agriculture value-added	0.738	0.130	0.671	0.181	0.838	0.524	0.712	-0.226
Industries value-added	0.954	0.959	0.966	0.981	0.480	0.733	0.820	0.877

Table 13. Summary Measures of Correlative Links Between Current Rates of growth of Fixed Investment and Key Output Variables: the Case of Papua New Guinea, Reference Period: 1985-89)

Correlates	Aggregate fixed investment	Mining fixed investment	Agriculture fixed investment	Industries fixed investment
GDP	0.356	0.194	0.235	0.594
Mining value-added	0.200	0.227	0.549	0.196
Agriculture value-added	0.587	0.524	0.543	0.536
Industries value-added	0.158	0.024	-0.528	0.183

Western Samoa: Statistical correlations based on current periods' correspondences between investment rates (from the private, public, and national perspectives) and contributions to GDP of industry groups, display "implausible" signs and magnitudes (Tables 11). However, when investment measures are lagged one period, the observed correlations show a "plausible" (positive) sign.

Annual growth rates of private sector investments show weaker correlative links with the value added contributions of four industry groups ("Subsistence," "Agriculture," "Manufacturing," and "Services") as compared with the correlative links between these industry contributions and the observed rates of public sector investments. The strengths of the correlations between public investment rates and value-added growth rates of the "Subsistence," "Agriculture," and "Manufacturing" industries when the period considered is 1982-89, are about the same (0.5). However, for the period 1985-89 the more important correlative links are between public investment rates and value added growth rates of the "Subsistence" and "Agriculture" industries; the estimates of the associated correlation coefficients are both about 0.8.

It may appear reasonable to make inferred generalizations; for instance: "these strong correlative links reflect government's diversion of capital formation into infrastructures (such as roads), which in turn, are conducive to productive activities in the "Subsistence" and "Agriculture" industries." Analysis like the correlative analysis just performed can neither confirm nor refute such generalizations.

The Accelerator Effect

A brief description of the flexible accelerator model on the basis of which alternative variants have been estimated and reported in this study is given in Appendix I. The said analysis utilizes national accounts data on Fiji, Tonga, and Western Samoa.¹⁴

The accelerator set-up, focuses on the time pattern of investment and the premise that the desired level of capital is determined by long-run considerations. In the empirical counterpart of the set-up, the level of desired capital is assumed to be proportional to output.

¹⁴ The data in the cases of Fiji and Tonga used in the analysis are taken from Kioa (1992); the data set used in the case of Western Samoa is taken from Fairbairn (1991).

The accelerator concept may aid in explaining observed fluctuations in the economy because it asserts that high levels of investment are associated with high ratios of output to capital and low levels of investment with low ratios of output to capital. Such associations, when interacting with the effects of the associated multipliers, may cause fluctuations in the level of output.

Fiji: The empirical evidence¹⁵ in the case of Fiji, strongly suggests that growths in output (GDP) do not significantly influence the level of investment. This result remains unchanged even when different time lag structures for the output growth specification were experimented with. In other words, accelerator coefficients for the case of Fiji are not significant; thus, the so-called capacity utilization variables, such as the ratios of output to capital (see Section 2), are not important determinants of investment in Fiji. Consequently, any attempt to deduce the pattern of investment from the movements of capacity utilization variables is likely, in the case of Fiji, to be futile.

The empirical results, however, give credence to our econometric specification of current replacement investment as equivalent to a simple proportion of the level of capital stock in the previous period. Moreover, on the basis of this specification, the replacement investment utilization rate (i.e., the rate at which total stock is being consumed in the productive process) is estimated to be about 6 percent.

Western Samoa: Despite the seemingly redundant effect of the accelerator on the investment pattern of Fiji, a preliminary analysis involving a number of variants of the model, using data covering the period 1982-89 on Western Samoa, revealed a significant result (accelerator impact) that is consistently

¹⁵ A host of variants of the flexible accelerator model were fitted; these variants incorporated alternative treatments of the time-lag structure of output and alternative specifications of replacement investment. Only the statistically significant results are reported; details of the results may be obtained from the author.

linked to the amount of growth (in output) realized between “current” periods and the “immediate past” periods.¹⁶

The results of this analysis suggest the following:

1. Aggregate investment pattern in Western Samoa seems to be predominantly determined by some autonomous (perhaps threshold) level; over the period 1982-89 this autonomous level amounts to about 42 million Tala (valued at constant 1982 prices).
2. The phenomenon described in (1) above, applies with equal force (statistical significance) to both private and public investment patterns. Valued at the 1982 prices, the autonomous level associated with the public sector had been about 34 million Tala; while for the private sector, it was about 8 million Tala.
3. Aggregate investment levels in Western Samoa seem to have been significantly stifled by the increments of growth of output (GDP) in

¹⁶ By letting I_t = total investment at year t , I_t^P = private investment at year t , I_t^G = public investment at year t , Y_t = GDP at year t , Y_{t-1} = GDP at immediate past year from t , Y_{t-2} = GDP at immediate past year from $t-1$; the estimated equations are:

Western Samoa:

$$i. I_t = 42.142 - 0.847 [Y_t - Y_{t-1}], R^2 = 0.717$$

(40.191) (-3.583)

$$ii. I_t = 42.230 - 0.515 [Y_t - Y_{t-1}] + 0.236 [Y_{t-1} - Y_{t-2}], R^2 = 0.703$$

(35.712) (-2.047) (1.112)

$$iii. I_t^P = 7.765 - 0.166 [Y_t - Y_{t-1}], R^2 = 0.553$$

(26.360) (-2.485)

$$iv. I_t^P = 7.729 - 0.114 [Y_t - Y_{t-1}] + 0.007 [Y_{t-1} - Y_{t-2}], R^2 = 0.329$$

(16.961) (-1.146) (0.083)

$$v. I_t^G = 34.377 - 0.681 [Y_t - Y_{t-1}], R^2 = 0.690$$

(38.132) (-3.332)

$$vi. I_t^G = 33.501 - 0.401 [Y_t - Y_{t-1}] + 0.229 [Y_{t-1} - Y_{t-2}], R^2 = 0.687$$

(33.494) (-1.840) (1.246)

Figures in parentheses represent associated t-ratio statistics; * and ** represent statistical significance at the 5 percent and 1 percent levels, respectively.

the corresponding immediate past periods.¹⁷ This accelerator-linked effect, seems to explain the apparent sluggishness in both real investment and real GDP over the 1980s.

Depending also on the relative strength of the multiplier, the observed significant accelerator effect seems to condone the prospects of a significant down-turn in growth for the economy of Western Samoa. Under this scenario and coupled with our significant estimate of the cited accelerator coefficient, a decline in the incremental increase in GDP, even though the Western Samoan economy continues to grow, would induce the real investment level to decline. Consequent to this decline in investment is a further decline in the incremental increase in GDP (i.e., GDP would grow at an even lesser rate).

Thus, coupled with induced effects of the multiplier, fluctuations in economic activity moulded around a sluggish trend are likely to prevail.

4. The “decelerating” *cum* stifling effect described in (3) above, comes dominantly from the public sector (see equation (v) of Footnote 16).¹⁸

Note that while the effect of the accelerator coefficient associated with the incremental increase in GDP between the two immediate past periods ($Y_{t-1} - Y_{t-2}$) is positive, its magnitude is trivial (statistically insignificant). Moreover, note that the very limited number of observations available¹⁹ precludes any enthusiasm to experiment with higher order time-lag structures for output. Thus, little is known in this case about the “typical” gestation period between changes in the relevant capacity utilization variables and the induced changes in investment.

1.2 Investment, Savings, and Aid

In the context of Pacific island countries, the question of how investment expenditures are financed is not only of great importance on its own account, but also it leads to questions that highlight the inherent elements of vulnerability and dependence in the current make-up of these island nations. The crucial and more specific question regards the relationship between aid and savings, as well as the relationship between aid and investment. We proceed to discuss these issues in light of accessible empirical evidence;

¹⁷ In other words, the immediate past period accelerator coefficient is negative and statistically significant.

¹⁸ The corresponding accelerator coefficient for the private sector (see equation (iii) of Footnote 16) is not statistically significant at the 5 percent level; it is, however, significant at the 10 percent level.

¹⁹ This is the so-called “degrees of freedom” constraint.

in particular, we offer an answer to the vexatious question: Does aid augment or substitute savings?

Investment and its Component Sources of Finance

Standardized in terms of “US\$million” unit, summary measures relating to the period 1985-89 of investment and its component sources of finance for five Pacific island countries are presented in Table 3. Based upon these summary statistics, we draw these (somewhat presumptuous) stylized comments:

- Apart from Fiji, the other Pacific island nations (Solomon Islands, Western Samoa, Vanuatu, and Tonga) “rely” considerably on external sources (net current transfers and factor incomes received as well as aid²⁰ in the cases of Tonga and the Solomon Islands) to finance their resource (savings/investment) gaps.²¹ In other words, many Pacific island countries have very feeble saving capacities and thus lack the domestic endowments to finance new investment projects or at least sustain prevailing levels of capital formation.
- For the cases of Tonga and Western Samoa, average levels of annual domestic savings over the period 1985-89 were (even) negative, indicating that higher average levels of goods and services were consumed relative to the average levels of output (GDP) that these countries had (domestically) produced. An obvious corollary points to the considerable reliance that is put on inflows of external resources and the ongoing strong and disproportionate pressures imposed by imports on these economies’ visible trade.

Savings and Aid

There are genuine and immediate limits to any attempt to draw inferences (especially about cause-effect relationships) based on summary (“snap-shot”) statistics such as those given in Table 3. In addition, of critical importance from our analytic stand-point are the ways in which particular flows have been derived; particular attention, for instance, needs to be given to the interpretations of those flows derived as residuals based on theoretical/accounting entities.

(Gross) domestic saving is by construction the difference between consumption (both private and public) and national income.²² Complementing this construction with net

²⁰ Aid as measured by the negative of the balance in the Balance of Payments’ current account (the so-called “net capital inflow”).

²¹ The resource gap in accounting terms, is identical to “Net inflow of external resources.”

²² GDP to be precise.

current transfers and factor incomes received from abroad gives rise to the conventional measures of (gross) national saving.

The asserted financing of the resource (savings/investment) gap or part thereof from this accumulated “saving measure” (national savings) therefore says nothing about the relative strengths of this measure’s two principal components (domestic savings and net current transfers/net factor incomes received from abroad) in the “filling” of this gap. This particular perspective may be more clearly seen in analogy by focusing on consumption, the complementary “product-counterpart” of investment.

In this case, the question becomes: What are the relative strengths of domestically produced income on one hand, and net current transfers and net factor incomes, received from abroad, on the other, (the two complement counterparts of national disposable income) in their respective “roles” of financing current consumption expenditure? Within the national accounting framework, the relative contributions of domestically generated income, on one hand, and current transfers and factor incomes from abroad, on the other, to national disposable income are the ones that could be adequately established from national accounts summary statistics. However, the relative contributions of these two counterpart flows to the financing of consumption expenditure could not be adequately established from such statistics.

The same applies regarding the relative contributions of domestic savings, on one hand, and net current transfers and net factor incomes received from abroad, on the other, to the financing of investment and, by direct corollary, to the financing of the so-called “resource (savings/investment)” gap. One other useful implication of focusing on this perspective in the context of the Pacific island countries is the assertion that in considering the issue of investment financing at the aggregate level, the more meaningful concept is (gross) national saving (and not [gross] domestic saving).

It is clear and logically followed that the perspective just discussed is endowed with an added dimension when aid flow is brought into the picture. In light of the above discussion, we ask two questions:

1. Does aid substitute or augment gross national saving?
2. To what extent does this substitution/augmentation (if any) take place?

By adopting an appropriate but simple model of the aid-savings relationship (see Appendix II), we probe for relevant empirical responses for the above questions using national accounts data on Fiji and Tonga.

The empirical results based on two variants of the model²³ carries the following messages:

Fiji: The relationship between aid and gross national saving is negative, but the strength of this (negative) relationship is weak and statistically insignificant. (See estimated equations of Footnote 23).

Tonga: (i) Aid displays a negative impact on gross national saving. (ii) This negative impact is very strong (statistically significant even with a very low error-related probability). (iii) The absolute value of this (negative) impact is less than one. (iv) The best available estimate of the impact (on saving rates) is -0.742. (See estimated equation of Footnote 23).

These empirical results may be interpreted as follows: For the case of Tonga, aid displaces savings (i.e., there has been a “crowding-out”). This crowding-out effect is strong. Relative to national income, a 10 percent rise in the growth rate of aid provokes a crowding-out effect in saving equivalent to the effect implied by a fall in the growth rate of saving to the tune of about 7 percent. This crowding-out effect in terms of equivalent real national saving leaks into current consumption.

²³ Note that the data used in this empirical analysis are taken from Kioa (1992). Furthermore, note that the adopted approach involves modeling the savings rate. By letting S = gross national saving, A = aid, Y = national income, the estimated equations are:

Fiji:

$$i. S/Y = 0.195 - 0.301 A/Y, R^2 = 0.111$$

(14.309) (-1.502)

$$ii. S/Y = 0.205 - 0.272 A/Y - 7.635 I/Y, R^2 = 0.113$$

(3.403) (-1.009) (-0.165)

Tonga:

$$i. S/Y = 0.312 - 0.649 A/Y, R^2 = 0.447$$

(18.179) (-3.243)

$$ii. S/Y = 0.217 - 0.742 A/Y + 7.766 I/Y, R^2 = 0.490$$

(2.243) (-3.360) (0.998)

Figures in parentheses represent associated t ratio statistics; and * and ** represent statistical significance at the 5 percent and 1 percent levels, respectively.

1.3 Investment, Employment, and Output

Within the conceptualization framework we are familiar with, capital and labor constitute the principal factors of output creation;²⁴ factor services (measured, say, in machine/labor hours) may be consumed in the underlying process of output production.²⁵ Thus, there exists, at least conceptually, one “level playing-field” (output) in which the efficacy and efficiency of labor and capital services may be fairly assessed. Obviously, there are crucial implications flowing from accessing (explicitly or otherwise) to the prevailing status of such efficacy and efficiency on processes underlying the allocations of employment and investible resources.

Two questions that need asking are the following:

1. What are the relative direct contributions of increases in capital and labor services to growth in output?
2. What are the relative indirect contributions (i.e., via productivity inducing effects) of increases in capital and labor services to growth in output?

Relative Contributions to Growth in Output

The first question focuses on the relative efficacies of capital and labor; the second focuses on their relative efficiencies. The empirical estimates that we herein use as a basis for our offered objective responses to the above questions are taken from the work of Kioa (1992).²⁶ The relevant results slightly expanded and adapted are summarized in Tables 14 and 15.

Before we discuss the available empirical estimates, we recall that the concept, “total factor productivity,” is empirically represented by a residual component of the basic growth-accounting set-up. Among the factors that can be asserted to influence total factor productivity is the quality improvements in the factor (capital and labor) inputs. The empirical estimates provided in Tables 14 and 15 offer, *inter alia*, a particular decomposition of the average rate of output growth, to highlight the respective contributions to it, of increases in factor (capital and labor) inputs, as well as the growth in total factor productivity.

²⁴ The other factor is land (natural resource), which may be assumed in the short-run to be constant.

²⁵ There is also, of-course, the so-called “ingredient” inputs (e.g., raw materials), which are actually used up in the production process.

²⁶ The model used to generate the said estimates in Kioa’s empirical study is a variant of the “neoclassical growth-accounting” framework.

Table 14. Contributions of Growth in Capital Stock, Employed Labor, and Total Factor Productivity to Growth in Output: the Case of Fiji ("Unit" in which estimates are expressed: percent)

	1970-75	1975-80	1980-85	1985-89	1970-89
1. Average growth rate of:					
Output: ^a	6.70	5.37	-1.11	2.29	2.65
2. Average share in Income of: ^b					
Capital	36	35	31	33	34
Labor	66	65	69	68	67
3. Annual growth rate of:					
Capital	2.92	4.12	2.14	0.71	2.95
Labor	4.98	2.48	2.85	1.75	3.02
4. Decomposition of average annual growth rate of output due to contribution of increase in:					
4.1 Capital	1.05	1.44	0.66	0.23	1.00
4.2 Labor	3.29	1.61	1.97	1.19	2.02
4.3 Total factor productivity ^c	2.36	2.32	-3.74	0.87	-0.37
5. Percentage contribution to output growth due to increase in: ^d					
5.1 Capital	15.67	26.82	-59.46	10.00	37.74
5.2 Labor	49.10	30.00	-177.48	51.97	76.23
5.3 Total factor productivity	35.23	43.18	336.94	38.03	-13.97

Notes:

a. The output measure used is "net domestic product at constant (1977) factor cost."

b. Capital and labor shares may not sum to 100 percent due to rounding.

c. Derived on a residual basis, i.e., 4.3=1.- (4.1 + 4.2).

d. The corresponding estimates for 1980-85 are appropriately obtained by reversing the usual sign as it is normally applied to cases with positive rates of output growth. Hence, with the reversal of signs aside, the magnitudes of the estimates corresponding to items 5.1, 5.2, and 5.3 are obtained by uniformly dividing the corresponding estimates under items, 4.1, 4.2, and 4.3 by the absolute value of the figure -1.11 of 1. and subsequently post-multiplying the resultant quotients by 100. The interpretation of the resultant estimates is carried out in the usual manner.

Source: Kioa (1992).

Fiji: Over the period 1970-89 changes in labor input dominate the fluctuations in the rate of growth of output. Overall, despite the induced stifling effect to the tune of (minus) 14 percent of changes in total factor productivity on the rate of output growth, the increases in labor input over the same period contribute to the realized average annual rate of 2.65 percent in output growth, a substantial 76 percent. Axiomatic to this result²⁷ is an induced contribution to this output growth rate to the tune of 38 percent by the corresponding inter-temporal increases in capital.

²⁷ This is because the underlying growth-accounting framework is effectively an allocation model subject to the usual "adding-up" constraint.

Table 15. Contributions of Increases in Capital Stock, Employed Labor and Total Factor Productivity to Growth in Output: the Case of Tonga (“Unit” in which estimates are expressed: percent)

	1975-80	1980-85	1985-89	1975-89
1. Average growth rate of:				
Output ^a	2.02	4.56	1.36	3.42
2. Average share in income of:				
Capital	34	39	43	39
Labor	66	61	57	61
3. Annual growth rate of:				
Capital	8.09	4.81	2.79	5.07
Labor	1.79	3.50	0.51	1.90
4. Decomposition of average annual growth rate of output due to contribution of increase in:				
4.1 Capital	2.75	1.88	1.20	1.98
4.2 Labor	1.18	2.13	0.29	1.15
4.3 Total factor productivity ^b	-1.91	0.55	-0.13	0.29
5. Percentage contribution to output growth due to increase in:				
5.1 Capital	136.14	41.23	88.24	57.89
5.2 Labor	58.42	46.71	21.32	33.63
5.3 Total factor productivity	-94.56	12.06	-9.56	8.48

Notes:

a. The output measure used is “net domestic product at constant (1985) factor cost.”

b. Derived on a residual basis; i.e., 4.3 = 1.- (4.1 + 4.2).

Source: Kioa (1992).

However, over the period covering the most recent five years (1985-89) for which the analysis was applied, a significantly different scenario emerges from that characterized by the 20-year averages described above.

The “significant” turnabout is the induced contribution of total factor productivity, which, instead of its above-described stifling effect on output growth, accounts for 38 percent of the average annual growth rate (2.29 percent) of the observed real output. Note that this marked turnabout, is even more clearly “significant” when we further take note of the corresponding evidence for the immediately preceding five-year period 1980-85. Contingent, *ceteris paribus*, on a direct (stifling) contribution of -3.74 percentage points by growth in total factor productivity, the average growth rate of output for this period became negative (-1.11 percent).

In other words, changes in total factor productivity over 1980-85, contributed positively and to a hefty tune of about 337 percent (see corresponding item [last row, third column] in Table 14) to the realized negative average growth rate of output (-1.11 percent). However, changes in growth rates of capital and labor inputs (with their positive percentage points contributions) contribute negatively to the realization of the said negative average growth rate of output.

These results imply that despite the healthy contributions of capital and labor growth to the growth rate of output during the early 1980's, this positive impact was more than neutralized by a considerable deleterious impact of changes in total factor productivity. This deleterious impact can be linked to, and interpreted as, considerable falls in the levels of capital and/or labor productivities, to the extent that negative productivities had occurred; i.e., considerable inefficiencies were involved in the utilization of capital and/or labor input(s).²⁸

During the period 1985-89 the estimated direct contributions to the realized average growth rate (2.29 percent) of output, induced by growths in capital and labor, were 10 percent and 52 percent, respectively. In the light of Fiji's "stylized" experience during the preceding five-year period, the said available evidence points to achievements of greater efficiencies in the utilization of capital and labor inputs.²⁹ (Corresponding growths in total factor productivity during the period 1985-89 contributed an average of 38 percent to the average realized growth rate of output).

These efficiencies noticeably augment the direct contributions to the growth rate of output of increases in capital and labor inputs. Note that the relatively smaller percentage contributions of the direct increases in capital and labor for the period 1985-89 are inheritable (at least in part) from the relative significant declines in the average rates (0.7 percent for capital and 1.8 percent for labor) at which these factor inputs have grown relative to the average rate (2.29 percent) by which output has grown over the same period.

Tonga: Unlike Fiji, increases in capital inputs dominate the contributions to the realized growth rates of output in Tonga. Over the 15-year period 1975-89 the average growth rate of output for Tonga was about 3 percent. About 58 percent of this growth came from the direct contribution of increases in capital input. Increases in labor input, however, induced a percentage contribution of 34 percent. Growth in total factor productivity, contributed on the average a positive 8 percent to the rate of output growth; this may be compared to the negative (average share) contribution (-14 percent) in the case of Fiji.

²⁸ The argument presupposes that measured changes in total factor productivity are significantly, if not totally explained by the changes in the qualities and allocative (substitution) efficiencies of the factor (capital and labor) inputs.

²⁹ The condition described in footnote 28 also applies to this inference.

Note, however, that the contribution of growth in total factor productivity to the growth rate of output during the five-year period 1985-89 is a negative 10 percent. Thus, despite the strong contribution (88 percent) from increases in capital input to the growth rates of output over this period, changes in total factor productivity, had stifled this impact. The corresponding direct contribution of growths in labor input is a positive 21 percent--well below capital growth's contribution. Hence, despite the apparent robustness in the direct contributions of increases in factor inputs, especially capital; the degree of inefficiency³⁰ in the utilization (within the production process) of these factor (capital and labor) inputs had been noticeable.

Implications on Unemployment Rate

The empirical estimates on the decompositions of the growth rates of output (Tables 14 and 15) also provide empirical contents to certain parameters which serve a pivotal role in the discussions of one of the issues of considerable interest to Pacific island countries--the prospects for reducing unemployment.

Two of the most important relationships/phenomena that somewhat "mechanically" but authoritatively decide whether or not the prevailing unemployment rate of a country would decline, are:

1. the labor productivity, and
2. the labor force participation rate.

Before any prevailing unemployment rate could come down, the corresponding prevailing rate of growth of output must exceed a threshold growth rate--a minimum rate necessary to neutralize increases in output due to any increase in labor productivity or any increase in output rate due to growth in the rate of labor employed arising entirely from any net increase in the country's labor force participation rate.

By confining our attention to the late 1980s (1985-89), we see (Tables 14 and 15) that the percentage contribution to the growth rate of output, of growth in total factor productivity, is positive (38 percent) for Fiji but negative (-10 percent) for Tonga. Moreover, note that the direct contributions of increases in labor inputs to growth rates of output differ substantially between the cases of Fiji and Tonga (52 percent in the case of Fiji but only 21 percent in the case of Tonga).

These empirical results suggest the following about the prospective status of unemployment in these two countries:

³⁰ The condition described in footnote 28, also applies to this inference.

- The efficiency of labor utilization (labor productivity) had been substantially higher in the case of Fiji as compared to that of Tonga. Thus, the rate of growth of output, in the case of Fiji, must be lifted in a marked extent before its prevailing unemployment rate could come down.
- For the case of Tonga, only a relatively smaller rise in the rate of growth of output is all that is needed for its prevailing unemployment rate to start declining.
- Before the unemployment rate in Fiji could decline, the growth rate of 2.29 percent in output, on the presumption that total factor productivity essentially corresponds with labor productivity per se; needs to be raised to at least 3.16 percent; i.e., an additional 0.87 percentage point--the equivalent contribution to output rate of growth in total factor productivity--is needed.

The concept of total factor productivity is pivotal in understanding the connections among capital (and hence investment), labor, and output. Factors and relationships that may offer reasonable explanations of the variations in total factor productivity include the following:

- The returns to scale in production/economies or dis-economies of scale in production.
- Current status of technology/provisions for technical progress.
- Factor input productivities/efficacy of capital and labor utilization/quality improvements on inputs.
- Status of allocative efficiency/improvements in competitiveness.

Many of these factors/relationships are inter-linked and are “significantly” sensitive if not directly responsive to key institutionally based parameters and market forces. Thus, the administration of appropriate policies and cultivation of appropriate environments (appropriate macroeconomic, institutional, and external environments) are of paramount value. Before looking more closely at selected aspects of these environments that are central to our study of investment in Pacific island countries, we first attempt to stylize, in a more systematic way, the determinants of investment.

SECTION 2. DETERMINANTS OF INVESTMENT

2.0 Alternative Perspectives

Empirical studies focusing on both developed and developing economies have identified significant empirical determinants of investment. (See for instance, Jorgenson and Siebert (1968), Jorgenson, Hunter, and Nadiri (1970), and the acclaimed survey of econometric studies of investment behavior by Jorgenson (1971)). These determinants have become the bases for alternative theories/models of investment behavior. An important stylized finding, which has been commonly taken into account in the constructions of these models, is the sensitivity of the identified determinants of investment to the level and perspective at which producing units are aggregated and viewed.

Such an empirical result may arise from two sources:

1. The sensitivity in the discriminating power of various determinants of investment to the final level reached and the mechanics utilized in the aggregation of the data employed in the empirical analysis.
2. The sensitivity in the discriminating power of various determinants of investment to behaviors of enhancing and/or stifling factors, which effectively operate at the institutional/industrial level that correspond to the final level of data aggregation.

At the sub-industry and firm levels, actual or potential determinants of investment may be grouped into three broad categories, which are not mutually exclusive in terms of their constituting components.

1. Capacity Utilization Status: Rates and levels of investment depend on capacity-related factors (e.g., the level of output ratios of output to capital) and discrepancies between levels of desired and actual capital stocks³¹.
2. Internal Finance Status: Rates and levels of investment depend on the profitability of the producing entity and the ability of this entity to finance its capital formation from flows of internal funds, including the special self-financing and pre-arranged equity participation for ad hoc investment purposes.

³¹ Technically measured by the so-called “accelerator coefficients.”

3. **External Finance Status:** Rates and levels of investment depend on the capability of the producing entity to mobilize and/or tap external sources for the financing of capital formation.

Note that while the rationale for the above stylized categories essentially utilizes sub-industry and firm-level perspectives, factors operating at higher levels of institutional set-ups (e.g., industry and sector levels) may indirectly but effectively impose significant enhancing or restraining impacts on these group-based determinants. Moreover, these impacts may not be exclusive to any one of these groups. A policy-induced change to the level of interest rate, for instance, may affect investment patterns not only via the availability of external funds (an "External Finance Status" factor) but also via the "Internal Finance Status" group-effects--through, say, the induced change to the opportunity cost of holding self-financing instruments such as bank deposits.

We proceed to adopt the perspective offered by the above stylized categorization to identify measures and factors that may have contributed to the growth of investment and/or influenced entrepreneurs' decisions whether or not to undertake investments in Pacific island countries.

2.1 Capacity Utilization Status

Levels of and changes in capacity utilization variables such as output level and ratios of output to capital may be all that is needed to determine the rate in which investment expenditure is undertaken. At the firm level the rationale may be linked to the profitability factor. The capacity utilization variables may act as surrogates for anticipated sales volumes, which may in turn constitute the best indicator for typical prospective profitability.

The accumulated impacts of these variables may aid, for instance, in circumstances where rates of investment expenditures are significant in explaining the inter-temporal behavior of output.

Some Macro-aggregate Level Evidence

National accounts statistics in the Pacific island countries have not been developed in a uniform way. And the available statistical time series are associated with significant variabilities--especially in terms of scope and quality (of the underlying primary data) and duration/time-period to which the available statistical series refer. Based on a set of national accounts statistics covering the period 1982-89 for Western Samoa and a separately prepared set of annual statistical series on output, investment, and stock for Fiji and Tonga, a preliminary quantitative (regression) analysis has been undertaken to

empirically probe into the relative importance of capacity utilization variables in determining investment patterns³².

As referred to in Section 1.1, the approach involves estimating variants of the flexible accelerator model originated by Chenery (1952) and Koyck (1954) (see Appendix I). The following stylized findings are applicable to the case of Tonga.

Tonga:

1. Growth and capacity utilization factors do not impose significant effects on investment patterns. (Estimated accelerator coefficients are statistically insignificant).
2. The pre-specified behavioral dependence of replacement investment on the actual level of capital stock via a simple proportionality share relationship with the level of capital stock of the previous period is empirically strong.
3. The replacement investment utilization rate is estimated at 8 percent.
4. Notwithstanding the result stated in No. 1 above, the time-lag structure of the investment process may well involve a large gestation period (more than three years). That is, if there is a significant link between accelerator variables (and hence GDP growth) and investment pattern, then such a link is likely to be associated with a long time-lag (gestation period).

Industry Level Evidence

The lack of relevant national accounts statistics (e.g., sector/industry-based statistical series on investment) precludes any statistical testing of the relative significance of capacity utilization factors on sector/industry investment patterns.

It is noteworthy to point out that the force of our previous empirical finding--i.e., that capacity utilization factors at the (Tongan) national level are not significant determinants of (Tonga's) investment pattern--is not necessarily carried over to the industry level (even in the case of Tonga).³³

³² The data for the case of Western Samoa were taken from Fairbairn (1991), while the data for the cases of Fiji and Tonga (covering the periods 1970-88 and 1975-89, respectively) were taken from Kioa (1992). Note that the restricted number of observations facilitated by the available statistical series limits the alternative specifications (e.g., model variants based on alternative time-lag structures for output) that one would reasonably experiment with. Only the significant results are reported; details of the results may be obtained from the author.

³³ The so-called "aggregation-problem" phenomenon is important in this context.

The apparent lack of empirical significance in the relationship between capacity utilization factors and investment patterns in the cases of Tonga and Fiji (see Section 1.1) may be due to the working(s) of dominant confounding effects. Such confounding effects may arise from direct and/or interaction effects of constraints that serve to obscure the underlying true inducing link between output and investment. A number of constraints relevant in this context are known to be prevalent in the workings of the South Pacific island economies.

Examples of constraints to output growth (and hence actual or potential growths in investment) include:

- External and internal barriers to exports (e.g., high transportation costs, limited scope for economies of scale in production, tougher quarantine requirements associated with certain overseas markets).
- Limited demands in domestic markets.
- Lack of quality development inputs (e.g., management and production skills, access to high standard product and process technologies).
- Limitations in government policy, the nation's infrastructure, and the economy's absorptive capacity.

We recall the rationalization that capacity utilization variables are reasonable surrogates for anticipated sales volumes and hence are reasonable indicators for prospective profitability. At the industry/firm level this rationalization may play a more prominent role. Thus, for this reason, our forthcoming discussion of factors that are linked to the internal finance status of the producing units has an added perspective significance.

2.2 Internal Finance Status

The internal finance status of producing units in the Pacific island countries may exert considerable impacts on these entities' investment patterns. The presumed underlying rationale is straightforward. Desired levels of capital stocks and therefore investment patterns depend on the levels of profits; realized profits are a good surrogate of expected profits--a presumed determinant of investment.

As already pointed out, the expectational hypothesis of profits may be viewed to closely akin the output (sales level) or capacity accelerator hypothesis. While of primary importance in the profit expectational hypothesis is the net (after tax) incomes, the gross operating surplus (profits) also plays an important, albeit secondary, role. Both variables normally exhibit strong correlational links with output (sales) level. Thus, in focusing on the concept of profitability in our consideration of "Internal Finance Status" factors as an

underlying force for marshaling investment in Pacific island countries, two major components need to be explicitly addressed.

1. The availability of flow of internal funds (liquidity) as a “measure” of profits.
2. The market value of the producing unit as a measure of expected profitability.

The second major component presupposes a positive correlation between market value and desired capital. The first relies on the view that the cost of financing investment expenditures escalates substantially beyond the point of exhaustion of internal funds. That is, in technical terms, the supply of investment funds schedule is horizontal up to the point the internal fund is exhausted; and beyond which the schedule is vertical.

Profit maximization as an objective criterion may continue to serve as a reasonable mode under which production and investment patterns in the Pacific island countries may be understood and explained. This is especially true if the concept of profitability takes a more extended version--for instance, to include the good-will *cum* security benefits inherent in meeting particular social obligations by, say, village-based (agricultural) small-holders. These elements may exercise stimulating effects on profitability via their consequent net impacts on the cost-regimes faced by these producers³⁴.

In any event, a host of profitability related factors serve directly or indirectly as stimulating or stifling forces in shaping the patterns of investment in Pacific island countries. We mention a few in this section, while others are discussed in Section 3 and/or are covered in a number of well documented studies³⁵.

Constraints

a. Low Domestic Savings Capacity

Recall the typically low levels (even negative levels in extended periods) of domestic savings and the significance of the resource (investment/savings) gaps, which are consistently observed among Pacific island countries (see Table 3). These reflect, *inter alia*, the restrictive capabilities of investors to effect new and/or additional investments via internally generated means of finance (profits)³⁶.

The potential role inherent in the “Internal Finance Status” of the firm to finance new and/or additional investments may be further hampered when changes in key

³⁴ Availability of relevant shadow prices would be of great serviceability to any analysis of this kind.

³⁵ See for instance, those marked * in the References.

³⁶ The caveat explained in Section 1.2, is relevant to this inference.

macroeconomic variables imply a greater cost-effectiveness in exploiting alternative means of financing investment. For instance, self-financing (a factor of the “Internal Finance Status” of the firm) is subjectable to a structure of variable opportunity cost, and thus in turn may depend on changes in the level of real interest rates.

b. Week Scope for Direct Financing

The scope for direct financing of investment expenditures through direct borrowings by investing units from borrowing units via the exchanges of marketable interest-bearing debt instruments (e.g., bonds, bills, marketable dividend-earning shares), is weak in Pacific island countries (see Halapua 1990). The limited use of these financial instruments in the region reflects the consequentiality of the following:

- The feeble existence if not virtual non-existence of a well-functioning securities market.
- The feeble capacity of a multitude of producing units to make significant levels of savings.

Stimulants

In terms of significance in scale, investments financed via the self-finance mode have been in the Pacific island countries almost exclusively confined to few indigenous and foreign-owned enterprises; the limiting constraint to the serviceability of this mode of finance has been (as already pointed out) the limited scope for accrued incomes to meet the saving purpose.

However, as far as the scope offered by direct financing (another factor of the “Internal Finance Status” of the firm) is concerned, noteworthy avenues exist for finding, say, an appropriate mix of government investment and current expenditures that, when financed via direct financing methods, in turn, augment resource availability but concurrently induce only low if not negligible inflationary pressures.

Fiji: The Fiji National Provident Fund (FNPF), which guaranties the funneling of compulsory savings out of wages and salaries, and insurance companies that collect small savings, provided during the period 1974-84 substantial proportions of the required domestic financial resources for financing the annual government deficits over the said period. In fact, there has been a “crowding in” effect in terms of resource availability as a direct result of this financing arrangement. As pointed out by Halapua(1990), the borrowing from banks and non-bank financial institutions, such as the FNPF and insurance companies, to finance the government investment infrastructure and the provision of public goods and services has increased the private demand for

inputs and investment, which in turn has augmented resource availability by increasing aggregate output and savings. That is, there has been “crowding in.”

This Fijian experience highlights the significant potential for accruing much-needed savings for investment via specially tailored strategies of direct financing--by involving, *inter alia*, non-bank financial institutions. The experience obviously demonstrates the existence of avenues for financing specific expenditures/projects that inherit positive probabilities of generating further private activities and in turn augment resource availability without fueling inflation.

2.3 External Finance Status

An important driving force in the pursuit of a particular configuration of inter-temporal investment and/or initial decision to invest on fixed capital formation is the capability of entrepreneurs to mobilize external sources of investible funds. In the context of Pacific island countries, recent studies (see for instance Halapua 1990) have confirmed the significance of this external finance factor. Evidence at the macroeconomic level (e.g., the prevalence among Pacific island countries of marked and significant resource [investment/savings] gaps) leaves little surprise about the relative “robustness” of the actual and notional demands for external finances.

In Pacific island countries, persistent low levels of savings exert significant pressures on the extent instruments of external finance such as bank advances and bonds could be mobilized to finance investment expenditures. Of crucial value in this mobilization process is the mechanism of financial intermediation. This mechanism, via the workings of financial intermediaries, decentralizes the decision and act of saving from those of investment. Consequently, the saving process operates more independently from the prevailing status of investment opportunity in the economy.

In Pacific island countries, the restricted scope for financing investment expenditures via internal sources makes the role of external (indirect) finance in the process of economic development more pressing and strategically significant. In this regard, commercial banks, development banks, and pension funds play crucial roles--especially when entrepreneurs persistently demand to invest more than what their saving capabilities could command.

Facilities for enhancing the role of financial intermediation and hence indirect finance in Pacific island countries are important for the following specific reasons:

1. Limitations on the scope and effective serviceability of internal finances “impede the speed and direction of private sector development in the Pacific island countries,” especially in cases that involve, for instance, “lumpy

investments ordinarily associated with the adoption of improved technologies and hence productivity....” (Halapua 1990).

2. The question of how investible funds at the disposal of financial intermediaries could be increased requires priority attention in the context of private sector development. Of imminence here is the question of how increased proportions of significant savings-linked flows (e.g., domestic savings and private transfers) could be channeled for the said purpose. This, plus the potential for efficient holding/acquisition of desired combinations of financial and real assets, determines the added abilities of financial intermediaries in Pacific island countries to extend further advances for investment purposes.
3. The non-existence or under-development of financial markets, plus limited volumes of accumulated domestic savings in Pacific island countries, implies that local entrepreneurs are accessible to only a very restricted range of those saving instruments that carry “reasonable” degrees of liquidity and expected returns. In Pacific island countries the more significant saving instruments in the context of external finance are time and saving deposits.

As Halapua (1990) has pointed out, the distribution of savings over available forms of financial assets is influenced by (1) the conceived pattern of expected returns, (2) the level of risk associated with a given portfolio, and (3) the costs associated with the act of entry to and exit from a given portfolio. Weighed against these saving effects, the commercial financial intermediaries had to implicitly calculate the implying claims on their reserves and thus extend (if warranted) further advances for investment conditional on the prevailing status of the entrepreneur with respect to, say, credit worthiness and collateral ownership.

In Pacific island countries, adherence to the said procedure-dominated process generally results in a marked asymmetrical allocation of investible funds between urban and rural producers. Rural producers who normally rely on income generating activities that typically bring in highly variable incomes are too often regarded as credit unworthy and/or inadequately endowed with prescribed collateral; thus, new loan allocations tend to favor these producers' urban counterparts.

4. Transformation of (limitedly serviceable) self-financing saving instruments (e.g., currency and demand deposits) into (more versatile and serviceable) indirect financing saving investments (e.g., time and savings deposits) calls for an induced lift in the opportunity cost of holding the former. For this purpose, the levying in Pacific island countries of appropriately monitored higher

interest rates, as compared to those prevailing in operation, may be needed. Moreover, more focused efforts need to be put into the means of (1) boosting effective demands for loans in many Pacific island countries; (2) pursuing a more innovative development of the financial institutions in order to strengthen the sources of investible funds; and (3) the effective directing of such funds to productive uses, especially those that are high in comparative advantage.

5. The need to boost effective demands for investible funds in Pacific island countries implies the need to identify domestic investment opportunities. Short-falls in this regard are reflected in the practice--persistently undertaken by financial institutions operating in the Pacific island countries--of re-investing substantial portions of loanable funds abroad.

For investment to effectively undertake its activist roles in development, appropriate environments need to be perpetually fostered. Among the most critical environments are those at the macroeconomic, institutional, and external models.

SECTION 3. INVESTMENTS: ENVIRONMENT

3.0 Microeconomic Environment

The decisions of entrepreneurs whether to undertake further or new investments are influenced by factors that influence and characterize the country's macroeconomic environment. In other words, regardless of what factors (e.g., capacity utilization and/or profitability-related factors) that may exert direct bearing on the determinants of investment, the interplay of principal macroeconomic forces (e.g., fiscal and exchange rates stimuli, regulative measures) does have crucial impacts, especially in marshaling the relative strengths of the forces that mould the average and marginal costs/benefits of investment.

The leading macroeconomic factors that affect economic development in Pacific island countries have been the subject of a good number of recent studies.³⁷ As a result, our understanding in particular about which factors and forces that have impacts on key investment parameters and hence the investment process itself seems to be reasonably well understood. By and large, the fundamental message is loud and clear--the prevailing government policies that dictate the current character of the macroeconomic environments in Pacific island countries leave much to be desired. The process of economic development in the island economies is frustrated by constraints clearly caused or induced by inappropriate policies.

Constraints

Macroeconomic policies in Pacific island countries may be regarded as inappropriate or ineffective if they serve to effectively impede the economic development process by significantly exerting upon these economies retarding or de-stabilizing effects on their financial stability, competitiveness, moderate status of external cycles, and efficient allocation of resources. Recently, it has become apparent that the principal weakness in government policies in the context of economic development in the region's economies is the lack of success in creating a competitive cost-price environment. However, one of the most challenging issues confronting macroeconomic policymakers is how to pursue and develop productive activities against a background typified by large cyclical swings in the external terms of trade.

a. Competitiveness

Fragmentation and smallness of domestic markets assist in widening the exposure of Pacific island economies to international markets. This has become an inevitable

³⁷ Among the institutions that have been instrumental in carrying out these studies, are the University of the South Pacific (USP), the East-West Center's Pacific Islands Development Program (PIDP), and AusAid formerly known as the Australian International Development Assistance Bureau (AIDAB).

consequence of these economies' pursuits of growth and related development goals. As a direct consequence, competitiveness has become a crucial issue.

The fact that Pacific island countries are price takers with regard to international markets makes critical the role of domestic policies in promoting competitiveness. That is, the negation from the reach of Pacific island countries of any effective room for commodity price setting--emanating from "demand-pull" factors or in the "control" of the supply-side--forces any campaign by these countries for maintaining or enhancing competitiveness to rely solely on efforts to contain costs.

Among the key cost elements (interest rates, wages, and foreign exchanges cost), the goal of achieving market-determined wages is the most difficult. Inflexible means of wages determination (e.g., indexation, higher urban cost structure) are prevalent among Pacific island countries. These have caused distortions and hence un-competitive pricing for labor inputs.

The effecting of exchange rate depreciations (e.g., in the case of Fiji where inflation peaked at 12 percent in 1988 following two large nominal devaluations) in the face of an inflexible (indexed) wage structure serves only to fuel inflation. Decisions on whether to proceed with additional or new investments could be hampered by the presence of a wage structure that undermines labor's competitive advantage through means that perpetually keep product costs of labor artificially high. In this context, one major difficulty with adopting appropriate remedial measures in the context of Pacific islands countries is the associatedly high political cost; in addition, a valid and workable strategy is lacking for linking wage rates adjustment to productivity.

b. Terms of Trade

Predominant among the Pacific island economies is the so-called "concentration phenomenon" (Lloyd and Sandrom 1982)--the case where domestic production concentrates (in terms of scope and scale) on a few industries and products. This characterizing phenomenon coupled with the smallness of these island economies (which thus limits accessible production possibilities and economies of scale potential) serves to explain the considerable dependence of these island nations on imported commodities to meet their domestic demands.

More importantly, these factors (via both their direct and interaction effects) offer the Pacific island countries little cushion to external shocks (e.g., wide fluctuations in international prices, the deleterious effects of natural disasters)³⁸. Consequently, large cyclical swings in the terms of trade are common, which means among other things that wide variations in the national incomes of the island countries are commonly observed. These swings among other repercussions have important bearings on investment patterns,

³⁸ Technically speaking, the external shock effect of a natural disaster may be viewed/analyzed within the context of price rationing.

especially if the decisions of entrepreneurs to invest largely depend on profitability-linked factors and/or the costs of direct financing.

c. Protection

Over-reliance on protective measures (e.g., reinforced use of trade and tariff structures) to heavily protect domestic industries, has led directly to inefficient allocation of resources, impaired status of competitiveness, and stagnation in growth.

Fiji: During the early 1980s, “Fiji pursued an inward-looking, highly regulated development strategy” (Treadgold 1992). This was associated with stagnation in Fiji's growth performance, which reflected declining rates of investment and low efficiency of investment.

The reluctance on the part of policymakers in Pacific island countries to dismantle protective measures is often helped by fear of an induced significant loss to government revenue and/or pressures consistently mounted by producers of those selected productive domains that have long enjoyed the artificially low cost structure facilitated by the protective barriers.

Stimulants

A number of macroeconomic policies pursued by Pacific island countries have actually fulfilled or seemed to fulfill their underlying goals and hence have served to mould better environments for investment. This degree of success, however, is not uniformly shared by all these island countries; in some cases, the positive signs are only prospective.

a. Stable Finance Environment

“In almost all island nations macroeconomic policies have generated a stable financial system. Fiscal and monetary policy has generally been conducted so that inflationary pressures have been avoided and the balance of payments outcome have been favorable.... accordingly, the financial environment has been conducive to private sector development and growth” (Pacific Islands Development Program 1989).

Western Samoa: The monetary authorities of Western Samoa have recently taken necessary steps to restrict the level of domestic liquidity and to sanction any increase in interest rates. These measures aimed (in the pursuit of financial stability) to restrict credit and incentivate savings (Fairbairn 1991).

Tonga: “Toward the end of 1991 inflation was moderating and had dropped to 6-7 percent by October reflecting a more favorable situation.... the 1991-92 budget introduced no additional revenue measures and the effects of the earlier increases had worked their way through the system. The gulf crises had proved

to be a short-lived affair, and civil servants' pay levels remained unaltered" (Sturton 1992).

Fiji: Over the period 1981-1991, "inflation averaged a modest 6.4 percent a year...." (Treadgold 1992).

Thus, the financial environment is generally stable and conducive to new and further investments.

b. Automatic Stabilizers

In response to commonly observed cyclical swings in the external terms of trade, some Pacific island countries have adopted ad hoc corrective mechanisms--usually a combination of automatic stabilizers and a specially tailored set of fiscal or monetary policy measures.

Solomon Islands: The rapid rate of growth in the value of commodity imports coupled with the declining value of exports (especially copra, palm oil, and fish) during the 1988-90 period led to substantial deficits in the balance of trade. The full effects of the deteriorating trade balance (on the capital account), however, have been cushioned by the inflow of funds from the export price stabilization scheme of the European Community (STABEX). (For details, see PDP Australia, Ltd. 1991.)

Tonga: The Tongan currency (Pa'anga) is presently pegged to a weighted index of the foreign currencies of Tonga's principal trading partners. This move is likely to reduce the variability of the exchange rates (both its nominal and real effective levels).

Papua New Guinea: Elaborate price stabilization schemes operate in order to iron out fluctuations in the incomes of producers of coffee, cocoa, copra, and palm oil due to fluctuations in these commodities' international market prices.

While such corrective measures have not always been successful in combating large swings in external cycles, they have generally served to reduce the de-stabilizing effects of adverse external shocks, thus providing a reasonably stable environment for trade and investment.

c. Towards a More Deregulative Interest Rate Policy

Over the past decade many Pacific island countries have moved away from the policy of fixed low interest rates to that of a more flexible system. The inclination is complemented by the use of relevant specific monetary policy measures. In Papua New Guinea there is

more active use of indirect financial instruments to encourage banks to invest excess liquidity in the inter-bank and securities markets; and with the guidance of technical assistance from the International Monetary Fund, there is greater involvement in open market operations involving government securities.

3.1 Institutional Environment

The importance of how growth is propelled by investment in the Pacific island countries lies not merely in the significance and initial impact of the technology, skills, and know-how that investment has made available but also on the efficiency and effectiveness with which these inputs are utilized and allowed to appropriately diffuse. The key for fulfilling these desiderata is accessibility to a stable and stimulating institutional environment.

It is clear in the context of Pacific island countries that this essential requirement calls for a more aggressive and durable effort, which surpasses the mere provisions of fiscal incentives and services of passive administrative systems. In a number of sub-industries (e.g., textile, manufacturing, horticulture), the Pacific island nations have a marked comparative advantage, but the lack of a sound institutional environment for entrepreneurial investment serves as a key limiting factor for the fuller exploitation of this highly valuable position.

Constraints

Several specific constraints that impede the easy accessibility of many Pacific island countries to a sound institutional environment for entrepreneurial investment are linked to inadequacies and inefficiencies in relevant administrative marketing and supporting systems and to shortfalls in the establishment of secured links to physical infrastructure and land/natural resources.

a. Administrative Systems

Entrepreneurs require fair and expeditious deliberations and handling of their investment proposals. To achieve this goal, the establishment of a “one stop shop” (see for instance, Thomson 1989) seems overdue for a number of Pacific island countries.

Fiji: There prevails in Fiji a bewildering range of enterprise support organizations actively involved in small business development. The consequent problems/inefficiencies include problems of duplication, lack of a unified framework for detecting gaps in services offered, and an impaired system of information exchange (Pacific Islands Development Program 1989).

The lack of an integrated network for the timely and efficient provisions of administrative services and essential information inputs means that the piecemeal fragmentary supplies

that are common with many existing enterprise support organizations in Pacific island countries will continue to stifle the flows of new investments.

b. Marketing Systems

With a few exceptions, e.g., the commodity boards of Papua New Guinea (see Coulter 1990), many widely held opinions have turned strongly against “traditional” marketing systems such as the so-called commodity marketing boards. The problem is linked directly to inefficiencies that are evidently and strongly associated with heavy interventions and involvements of government and statutory agencies and deficiencies in competitiveness (due, *inter alia*, to these bodies' inherent monopolistic positions).

c. Supporting Services

Stifling the drive for sustained or additional investments in particular productive activities is often traced to frustrations of producers due to inadequacies and/or inefficiencies in the provisions of much-needed support services. Among the known culprits in this regard are a host of agriculture extension functions. In Pacific island countries these functions are often not catered for by private entities or by self-financed industry associations.

Higher returns to producers in Pacific island economies (and therefore higher subsequent injection rates of investment) are substantially fostered if the following support services are forthcoming and/or strengthened:

1. With respect to the agriculture industry, the facilitation of an effective process of post-harvest management and treatment--including high quarantine and control quality standards.
2. The provision of technical assistance to sub-industries enjoying comparative advantage and to commercial industry organizations.
3. The facilitation of appropriate inputs (e.g., policy and legal inputs) for achieving coherent industry-based self-regulations (see Pacific Island Development Program 1989).

Stimulants

a. Physical Infrastructure

Most important in moulding the decision whether or not to make new investment (especially in the context of foreign investment) is the accessibility to appropriate physical infrastructure on a long-term basis. The provision of such a physical infrastructure may also readily resolve concerns over land tenure arrangement--an issue that has sensitive and rather complicated elements in the context of many Pacific island countries. Moreover, such a provision may reflect real durable commitments (say, by government) to the development effort requiring new and/or additional investments and thus further assist in boosting entrepreneurial confidence.

Such a support initiative has emanated in various forms and extent among Pacific island countries; examples include the Tonga's Small Industries Centre (SIC).

b. “One Stop Shop”

The provision of industry promotion facilities is one of the effective forms of assistance some governments of the Pacific island countries have competently pursued in promoting investment, especially in the manufacturing and tourism industries.

Tonga: The Small Industries Promotion Unit operating as a “one stop shop” under the Ministry of Labour, Commerce and Industries, offers entrepreneurs a range of services, including company registration, grants of development licenses and incentives, exposure visits to potential markets, and participation in a range of specially tailored training programs.

3.2 External Environment

The smallness of domestic markets means that foreign investments in Pacific island countries can be attracted almost exclusively to industries (or niches within industries) that exhibit strong comparative advantage with healthy prospects for the export markets. The identification of these desirable domains, however, is not sufficient to guarantee the attraction and activation of foreign investments. Other crucial factors that require prior scrutiny include:

1. The appropriateness of the macroeconomic and institutional environments and available support services that are relevant to a given domestic industry/sector level/group of interest.
2. The availability of informed insights into the risks associated with investing in a given Pacific island country and in a particular industry/sector.
3. The ranges and specific types of support (if any) from outside affiliations and regional/international arrangements that offer support for production of exports of producers/exporters of Pacific island countries.

As it has been well understood, most forces that serve to either stimulate or stifle foreign investments in the Pacific island countries are closely linked to the above factors.

Stimulants

a. External Support Packages

Investments (foreign or domestic) aimed at producing for the export markets are stimulated (although to varying degrees) by the availability of external support packages. Examples include the access of Pacific island countries to preferential trade agreements (e.g., the South Pacific Regional Trade and Economic Cooperation Agreement [SPARTECA], the Lomé Convention, the Generalized System of Preferences [GSP]--see Thomson 1989 for relevant details).

Preferential trade agreements such as SPARTECA offer duty-free unrestricted access/concessional access to both the Australia and New Zealand markets; for selected products (satisfying certain conditions including certain rules prescribing eligibility criteria regarding product origin), originating from South Pacific Forum member countries. These market-oriented stimulants have had significant positive contributions to the channeling of new and additional investments into export-oriented production in Pacific island countries.

b. Incentives

Elaborated sets of fiscal and other forms of incentives have been adopted by Pacific island countries to attract foreign investments. These include direct corporate tax concessions, provisions for duty free raw materials, and allowances for accelerated depreciations (Refer to Table 16).

Constraints

a. Non-tariff Barriers

Despite the seemingly generous concessions provided for by preferential trade agreements, non-tariff barriers exist that may frustrate exporters in Pacific island countries in their efforts to cost-effectively undertake and successfully fulfill export deals. The most common non-tariff barriers are overseas quarantine regulations, quota systems, and subsidies.

Cook Islands: Officials from the Cook Islands have “complained about the recent sharp increase in New Zealand quarantine inspection fees and said that these were a sharp disincentive for the continuation of Cook Islands fruit exports to New Zealand” (Thomson 1989).

b. Selected Transaction Costs

High freight rates and infrequent/irregular shipping services to and from the Pacific island countries frustrate exporting efforts from these countries. In Kiribati, transportation costs

Table 16. Investment incentives: Major incentive schemes available and maximum duration of direct tax benefits

Countries	Losses carry forward	Duty free on raw materials, machinery, etc.	Direct tax concessions at establishment	Incentive schemes based on specific contribution	Depreciation accelerated	Duration of direct tax benefits (# of years)	Others
			Direct tax holidays at establishment			Maximum tax holiday for special projects at establishment	
Fiji	6 years (after *)	Yes	(*) 8 years	Exports agricultural Pioneer industries Hotels	Yes	5 out of any 10 years	Yes
Solomon Islands		Yes	Yes	Pioneer industries Exports		5 years	Yes
Tonga	Yes (no time of monetary limit)	Yes	5-10 years	Exports	Yes		Yes
Vanuatu			No tax on individuals, corporate or double tax treaties				
Western Samoa	Yes		5 years	Primary producer Exporters		5 years	Yes
Others	Incentives or assistance as negotiations site choice, security of tenure and information for use on planning and design, infrastructure and communications support, staff recruitment, employment, protection measures						

Sources:

- i. Original source: ESCAP/UNCTC 1984; SPEC 1982.
- ii. Subsidiary source: Parry 1986.

hinder exports generally; in Tonga and Western Samoa, long delays in transportation have hampered, in particular, exports of horticultural produce; in Fiji, air-freight capacity has become a significant constraint on the expansion of garment exports.

c. Lack of International Marketing Capability

Especially with regard to domestic investors, new or further investments on the production of export-oriented commodities may not materialize due simply to a lack of prerequisite export capabilities. According to the Trade Division of the South Pacific Forum Secretariat, "the FICs (Forum Island Countries) suffer from inadequate knowledge of foreign markets and supply channels, a lack of marketing expertise, and a lack of government policy and measures for export development" (Thomson 1989).

d. Internal Constraints

Certain constraints and disincentives have stifling effects that are most detrimental to actual or prospective investments in specific domains of export-oriented activities in the Pacific island countries. Examples include:

1. Lack of credit insurance and guarantee facilities for exports.
2. Difficulties faced when exporters have to persistently operate under over-valued currency regimes.
3. Lack of necessary skills, adequate resources, and political direction and will to vigorously develop export capabilities.

e. Risks *cum* Uncertainty

Our brief account of significant constraints/disincentives that confront entrepreneurs' decisions whether to invest in the Pacific island countries makes evident the fact that considerations of risks and uncertainties play a crucial role in the outcomes of investment decisions. Understanding the likely long-term impacts of risks and uncertainties entails the need to secure sound insights into their sources. Technically, a proper characterization of the investment linked risk *cum* uncertainty factor should constitute an integral part of the project evaluation/feasibility study component of the investment project cycle.

The risk *cum* uncertainty factor has mainly stifled investment initiatives in Pacific island countries for two principal reasons:

1. The prevalence of factors that exhibit genuine highly volatile characters-- examples include the erratic behaviors of relevant cost-related cooperant forces such as those relating to transportation, the fluctuations of income/sale related market forces such as the price-taker based returns from export sales, and the

uncertainties associated with the volatilities of certain facets of the macroeconomic and social environments such as the cost-benefit ramifications of political change and law and order instability.

2. The lack of a systematic and robust framework in which risks and dominant uncertainties could be characterized, appraised, and addressed (in terms of seeking potential remedies and/or means of containing them) in addition to the need to effectively communicate such invaluable findings to pre-committed or prospective investors and to appropriately advise these investors on how they may effectively manage these significant aspects of the risk *cum* uncertainty factor.

In one perspective, a number of investment-stifling elements emanating within the external markets environment may be perceived and appropriately characterized (from the stand-point of pre-committed and prospective entrepreneurs) as implicit components of the risk *cum* uncertainty factor associated with investment in Pacific island countries. Some of these elements are:

1. The apparent lack of a market image for export products from the Pacific island countries.
2. The apparent devaluation effects of the trade concessional provisions provided under SPARTECA due to the removal of protectionist policies in Australia and New Zealand.
3. The perceived arbitrariness and controversy surrounding the “rules of origin criteria” in relation to trade concessions provided under SPARTECA and their likely future impacts on bona fide investments on manufacturing operations.

Paramount to an effective means (*modus operandi*) for characterizing and addressing (including monitoring) these aspects of the risk *cum* uncertainty factor is the ability to operationalize and/or objectively characterize (and hopefully quantify satisfactorily), major constraints, economic relationships, and consequences of key investment decisions.

SECTION 4. OPERATIONALIZING INVESTMENT DECISIONS

Appropriately designed investment oriented policies in Pacific island countries aim at activating and sensitizing the process of allocating investible resources in favor of those productive domains with significant potentials for profitability and comparative advantage and/or with high levels of well defined social benefits. Under this perspective, any effort to allocate investible resources consistently requires that some quantification take place.

Moreover, it is a necessary condition (although not sufficient for the procuring of credible forecasts and/or effective stylizations of ongoing efforts or plausible future scenarios regarding investment-characterizing parameters), that quality (valid, reliable, and timely) national/sector accounts statistics and related information are available. Of particular importance in this regard are the conditions of timeliness and the extent (how disaggregated or specific) the said statistics and information are made available.

As a matter of fact, there are requirements that need fulfilling before the links among determinants of investment and between these determinants and the relevant stimulating/stifling factors are adequately captured, characterized, and prioritized. Strictly speaking, these requirements become more stringent when the underlying task requires that comparative analysis be performed. For a given investment parameter, the comparative perspective may be focused on different dimensions (e.g., between countries, across industries, over time).

Of paramount importance in this context are two requirements:

1. The availability in a consistent fashion of quality information and statistical inputs.
2. The availability of a sound and sufficiently flexible analytical framework that is robust under varying conditions and sufficiently responsive to the changing behaviors of relevant investment parameters, including those associated with investment's stimulating/stifling factors.

From an analytic stand-point, once significant determinants or concrete perceptions about significant determinants of investment have been identified, there arise questions whose answers are pertinent in gaining concrete insights into the following three epistemological stages of the investment decision process:

1. The binary-choice decision of whether to invest or not to invest.
2. The decision, conditional on an affirmative decision to invest, on how "deep" (for instance, in terms of scale) capital formation is to take place.

3. Given that the current status of the investment process signals that all operations in the project cycle have been completed or simply in anticipation of such a completion, the decision on how the overall investment process is to be evaluated with its future outcomes (anticipated or otherwise) properly monitored.

Pertinent questions to be asked in addressing these issues include the following:

1. Could the said significant determinants or concrete perceptions about significant determinants of investment be stylized into usable, albeit precise, operational forms?
2. Is it plausible to operationally identify separately the individualized effects (effects that possibly involve both direct and indirect influences) and the interaction effects of the said determinants of investment? (The operationalization goal in this regard becomes more important [and perhaps more difficult] when strong inter-dependencies [e.g., between project plan and aggregate plan parameters] are in operation.)
3. Is it plausible to empirically establish in more precise terms, the stylized time-lag structures of investment for alternative stylized scenarios? (Examples include, time-lag structures associated with investment-growth relationships for alternative arrangements such as “government investment on specific infrastructures accommodated via direct finance,” as compared with “foreign investment accommodated via indirect finance on an exportable niche product.”)
4. Is it plausible to empirically establish in precise terms the relative significances and trend effects of ongoing demands for replacement investment? (This question is especially important in the context of efficacy of sustaining prevailing levels of investment or regarding decisions on the prospective profitability of effecting further capital formation).
5. (Assuming that the treatments of the identification tasks (referred to in No’s 2, 3, 4 above) have been satisfactorily achieved, is it plausible to administer in some objective and consistent way a ranking exercise in which the principal stylized determinants and significant stimulating/stifling factors of investment could be rationalized? (This rationalization may involve the ordering of the said determinants and factors in terms of relative priority and “relative viability”--herein defined as the relative weight of the minimum cost needed to neutralize any associated significant inhibitory constraint(s).)

The research focusing on the domain of investment in Pacific island countries has served prominently to successfully resolve the issue of identification; that is, the identification of relevant policy-related factors and direct/indirect forces that actually or potentially affect investment decisions and hence investment patterns. Thus, attention to the various questions and requirements raised above would no doubt serve to further robustly marshal these ongoing efforts.

Moreover, attending to such questions and issues would serve to operationalize as far as possible the precise implications of many presumably valid generalizations that have become a common rhetoric in development plan policies and deliberations regarding investments in the Pacific island countries.

APPENDIX I. THE FLEXIBLE ACCELERATOR MODEL

Denote the actual level of capital at time, t , by K_t and the desired level by K_t^* . Capital is assumed to adjust toward its desired level by a certain proportion of the difference between desired capital and actual capital in each period. Thus, the flexible accelerator mechanism may be specified as:

1. ----- $K_t - K_{t-1} = [1 - \mu] [K_t^* - K_{t-1}]$,
where μ is a constant.

Further assume that investment replacement is proportional to actual capital stock. Thus, the adopted accounting definition for a change in capital becomes:

2. ----- $K_t - K_{t-1} = I_t - \delta K_{t-1}$,
where I_t is (gross) investment at time, t ; and δ (a constant) may be interpreted as the rate of replacement.

Substituting (2) into (1), we arrive at a model of investment expenditures based on the flexible accelerator mechanism:

$$I_t = [1 - \mu] [K_t^* - K_{t-1}] + \delta K_{t-1} .$$

Under the accelerator theory of investment behavior, the desired capital is proportional to output (Y). That is,

$$K_t^* = \alpha Y_t ,$$

where α is the desired capital-output ratio.

Thus, an estimable variant of the accelerator theory of investment behavior may be written as:

$$I_t = \mu * \alpha [Y_t - Y_{t-1}] + \delta K_{t-1} .$$

Other estimable alternative variants based on alternative lag-structures for output and inclusion or otherwise of investment replacement are readily specified.

APPENDIX II. THE ESTIMATED AID-SAVING MODEL

Specify the consumption function (in the spirit of a modified Keynesian consumption function) as:

1. ----- $C = \alpha + \beta(Y + A)$,
where C is consumption, Y is income, and A is Aid.

Since saving is given by:

2. ----- $S = Y - C$;

it follows (by substituting (1) into (2) and dividing throughout by Y), that:

3. ----- $S/Y = (1 - \beta) - \alpha/Y - \theta A/Y$.

In addition to estimating (3), we also estimate following Griffin (1970), the variant:

$$S/Y = \tau - \beta A/Y .$$

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