

Saving Behavior in a Small Island Country in the South Pacific: A Case Study of Tonga*

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Introduction

The Kingdom of Tonga is a small archipelago nation located in the central South Pacific. It consists of three groups of small islands, of which only 36 are inhabited. Total land area is estimated to be 720 square kilometers and is of volcanic and coral origin with a high degree of fertility. The economy is dominated by agriculture which contributes to 40 per cent of its gross domestic product (GDP) and agriculture production is dominated by food crops for domestic consumption and a small range of cash crops for exports, including squash, copra, melons and vanilla. The rest of GDP originates to a major extent from the services sector and in a small proportion from manufacturing of consumption goods for domestic markets and construction. Tonga's population has remained stagnant at 95,000 due to substantial migration

* The views expressed in this paper are the author's own and do not necessarily reflect the views and policies of the Asian Development Bank.

of its skilled people each year to the metropolitan countries, including Australia and New Zealand, which is a major characteristic of the Polynesian islands. It is estimated that at least 45,000 Tongans are residents in Australia, New Zealand and USA. Tonga has a per capita gross national product (GNP) of about US\$ 1,450, placing it in the lower middle-income group of countries.

Like many other Pacific island economies, its developmental efforts have been sustained more by external assistance in terms of generous aid and concessional loan assistance than by domestic resources. Remittances from the overseas Tongan residents have been an additional support to the country's resources. These external savings have been instrumental for not only financing the investment needs for ensuring economic growth but also towards reducing the inflationary potential of otherwise expansionary fiscal and monetary stances adopted by the country from time to time.

Viewed against the general background of declining foreign aid flows to the South Pacific region, it has been increasingly recognized that as far as possible, a major proportion of investment should be financed from national savings. Tonga has implemented several reforms, notably in the last six years since 1987, in regard to mobilization of savings through taxation measures. The objective of this paper is to examine the trends in savings and analyze the country's saving behavior. The paper is organized into four sections. The first two sections analyze the trends in economic and financial savings whereas the third section outlines a simple model for analyzing the saving behavior and presents

the results of empirical investigation. The final section offers certain conclusions for consideration by policy makers.

I Savings in Tonga

Forms of Savings

There are two broad categories of savings: accumulation of real assets and of financial assets. Further, cultural factors, unique to the South Pacific societies such as the extended family system, based on principles of sharing and caring for its members, have to be recognized as an important determining factor in regard to savings. Furthermore, conspicuous consumption in terms of gifts and feasts during social events and family occasions such as weddings and funerals also influence saving behavior.

In a partially monetized economy such as Tonga, savings in the non-monetized sector is of necessity by acquisition of real assets such as pigs and tools. Savings takes this form even within the monetized sector due to non-availability of information, lack of access to financial institutions and partly due to inflationary influences. In such circumstances, acts of saving are indistinguishable from investment decisions.

Viewed in the context of cultural and institutional setting, measurement of savings by households is a difficult task. On the other hand, the government savings can be measured, as the term would refer

to excess of Government's current revenue over recurrent expenditure. In a similar fashion, the business savings can also be measured. Since the business sector is a small proportion of total economic activities, a major proportion of the country's savings is likely to be from the household sector and therefore, measurement of savings has to be necessarily through the use of national income accounts.

Definition of Savings

The term national savings includes domestic savings, net factor incomes and net unrequited private transfers, which are dominated by inward remittances by the country's citizens resident abroad. National savings does not include net official transfers. The national savings so defined, measures the country's own efforts, as domestic savings data by itself present an understatement of national efforts to mobilize resources.⁽¹⁾ Further, gross national savings (GNS) rather than net national savings is used for the analysis. This is because of the often varying and arbitrary nature of depreciation allowances employed to calculate net investment.

National Accounts Approach to Savings Measurement

From the national accounting identities, the current account of balance of payments is equal to the sum of the public and private sectors' saving/investment balances. Thus, if public sector investment exceeds public sector saving and if private sector investment exceeds private saving, there must be a current account deficit in the balance of

payments.⁽²⁾

In symbols:

$$CA = Y - E = Y - (C + I + CE),$$

where CA = net exports (exports minus imports) plus net services receipts and net unrequited private transfers and excluding government transfers;

Y = national income

E = national expenditure

C = household consumption of goods and services
purchased at home and from abroad;

I = gross domestic investment, by firms as well as government;

CE = recurrent expenditures of government;

Since national income can be saved, taxed or used for consumption, CA can be expressed as:

$$CA = (CR - CE) + (S - I)$$

where, in addition to the symbols explained before,

CR = recurrent revenues of government comprising
tax and non-tax revenues, but excluding grants; and

S = private savings

The national income accounts of Tonga are of very recent origin and reliable time series available relate only to the period in the eighties and thereafter. Utilizing the national income accounts (1980/81-1990/91) of Tonga,⁽³⁾ GNS has been estimated by deducting foreign savings, which is the current account (CA) deficit before the government transfers in the balance of payments, from gross domestic

investment (GDI). Gross domestic savings (GDS) is determined by deducting net factor incomes and unrequited private transfers from GNS. Since government savings, which is the difference between current revenues excluding external grants and recurrent expenditures, is known, it can be subtracted from GDS to arrive at private savings.

For the purpose of comparison on a year-to-year basis, GNS, GS, PS and other variables, which are in current prices, are scaled to the respective year's GNP. In the context of Tonga being an open economy, GNP rather than GDP, has been chosen as the denominator for scaling purposes. This follows the well-adopted procedure in similar analyses.⁽⁴⁾ Thus, the ratio of GNS to GNP would be known as national saving rate (gns) and the others, such as GDS and GS similarly expressed as ratios to GNP would signify domestic saving rate (gds) and government saving rate (gs).

Savings Performance

Following the approach outlined above, Table 1 presents a times series of data in current prices, whereas the data relating to scaled-down magnitudes, namely, gdi (ratio of GDI to GNP), fs (ratio of FS or CA deficit to GNP) and estimates of gns, npt, nfi, gds, gs and ps for the eleven year period (1980/81-1990/91) are given in Table 2. There has been a declining trend in gdi since the mid-eighties, as the ratio decreased steadily from 25.3 per cent in 1984/85 to 16.8 per cent of GNP in 1990/91. The decrease was primarily due to physical completion

Table 1

Tonga : Gross National Product, Domestic Investment, National and Domestic Savings: 1980/81 – 1990/91 (Million Pa'anga)										
Year	Gross National Product (GNP)	Gross Domestic Investment (GDI)	Current Account Deficit Before Official Transfers (FS)	Gross National Savings (GNS)	Unrequited Net Transfers (NPT)	Net Factor Income (NFI)	Gross Domestic Savings (GDI)	Government Savings (GS)	Private Savings (PS)	Net Official Transfers
1980/81	57.5	16.0	5.7	10.3	13.6	3.4	-6.7	0.7	-7.4	1.7
1981/82	64.2	19.1	1.9	17.2	18.0	3.0	-3.8	0.3	-4.1	6.3
1982/83	69.3	19.8	2.5	17.3	16.3	1.7	-0.7	2.4	-3.1	16.1
1983/84	75.5	17.5	-1.7	19.2	17.3	2.3	-0.4	0.1	-0.5	7.3
1984/85	89.8	22.7	6.1	16.6	26.3	3.8	-13.5	1.0	-14.5	4.2
1985/86	107.6	24.6	6.3	18.3	33.2	5.6	-20.5	-0.4	-20.1	4.4
1986/87	121.4	25.9	0.7	25.2	33.7	4.8	-13.4	-2.5	-10.9	9.6
1987/88	133.4	28.9	17.0	11.9	29.3	8.6	-25.9	0.1	-26.1	7.7
1988/89	140.4	27.4	14.6	12.8	30.5	5.4	-23.2	-1.6	-21.6	12.3
1989/90	152.4	27.2	-2.9	30.1	39.6	5.5	-15.0	-4.2	-10.8	13.5
1990/91	177.4	29.8	13.2	16.6	38.9	5.3	-27.6	-1.1	-26.5	8.1

Source: Australian National University (ANU), National Center for Development Studies (NCDS), South Pacific Economic and Social Database : Statistical Compendium : Tonga, February 1994 and Author's Estimates

1/ Government Savings is the difference between current revenue, excluding grants and recurrent expenditure.

Table 2

Tonga : Gross Domestic Investment National and Domestic Savings : 1980/81 - 1990/91 (Per cent of GNP)									
Year	Gross Domestic Investment (gdi)	Current Account Deficit Before Official Transfers (fs)	Gross National Savings (gns)	Unrequisted Net Private Transfers (npt)	Net Factor Incomes (nfi)	Gross Domestic Savings (gds)	Government Savings (gs)	Private Savings (ps)	Officials Transfers (ot)
1980/81	27.8	9.9	17.9	23.6	5.9	-11.6	1.2	-12.8	3.0
1981/82	29.8	3.0	26.8	28.0	4.7	-5.9	0.4	-6.3	9.8
1982/83	28.6	3.6	25.0	23.5	2.5	-1.0	3.4	-4.4	23.2
1983/84	23.2	-2.2	25.5	22.9	3.1	-0.5	0.1	-0.6	9.7
1984/85	25.3	6.8	18.5	29.3	4.2	-15.0	1.1	-16.1	4.7
1985/86	22.9	5.9	17.0	30.8	5.2	-19.0	-0.4	-18.7	4.1
1986/87	21.3	0.6	20.7	27.7	4.0	-11.0	-2.1	-8.9	7.9
1987/88	21.7	12.7	8.9	22.0	6.4	-19.4	0.1	-19.5	5.8
1988/89	19.5	10.4	9.1	21.7	3.9	-16.5	-1.1	-15.4	8.8
1989/90	17.9	-1.9	19.8	26.0	3.6	-9.8	-2.8	-7.1	8.9
1990/91	16.8	7.4	9.4	21.9	3.0	-15.6	-0.6	-15.0	4.6

Source: ANU, NCSA : South Pacific Economic and Social Database, Statistical Compendium : Tonga.

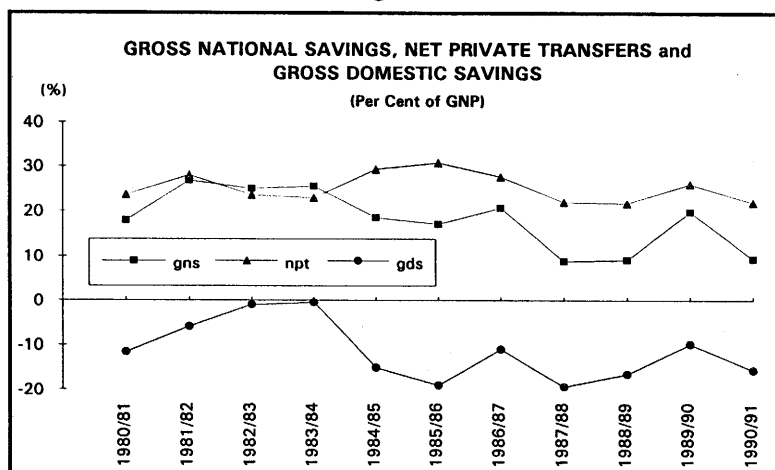
February 1994 and Author's Estimates

completion of major public sector investments in early eighties. However, private sector did not pick up to maintain the momentum, as investment opportunities were found limited.

Foreign Savings and National Savings

There has been erratic fluctuation in foreign savings as reflected in the current account deficit, which is calculated taking into account net private transfers. It reached the highest proportion in 1987/88 when it was 12.7 per cent of GNP, increasing from the previous year's ratio of 0.6 per cent. Although there was a decline in 1988/89, the fall was only of small dimensions, compared to the decline in 1989/90, when it was at a low figure of -1.9 per cent reflecting current account surplus in the balance of payments, which may be ascribed to lower absorption in the economy. Accordingly, the national saving rate, which is the ratio of

Figure 1



GNS to GNP, also declined during the study period, from the peak 26.8 per cent in 1981 /82 to 17.0 per cent in 1985/86 and after an increase in 1986/87 further declined to 9.1 per cent in 1989/90. Again it rose further to 19.8 per cent in 1989/90, only to decline in the next year. (Figure 1)

Net Unrequited Private Transfers

Net unrequited private transfers, which are mostly remittances from the overseas Tongan nationals, have remained at a fairly high level (more than 20 per cent of GNP). Particularly during the three-year period from 1984/85 to 1986/87, the proportion was close to one third of GNP. In the following five years, there was some decline in remittances, reflecting recessionary conditions mainly in Australia and New Zealand. However, net unrequited private transfers have all the time far exceeded national savings, except in one year during the eleven year period under study. In 1982/83, national savings was 25 per cent of GNP, whereas net unrequited private transfers were slightly less at 23.5 per cent. Thus, it is quite apparent, Tongans abroad clearly contributed to national savings almost each year in a consistent manner and financed investment, reducing the otherwise inflationary potential of such investment.

Net factor incomes, on the other hand were relatively small and they were mostly investment incomes. They have, however, been on the decline during the study period, decreasing from about 6 per cent in 1980/81 to 3.0 per cent of GNP in 1990/91.

Gross Domestic Savings and Resource Gap

Gross domestic savings (GDS), which is calculated by subtracting the net private transfers and net factor incomes from national savings, has been consistently negative, despite wide fluctuations in the first half of the eighties. The extreme dependency of the economy on net private transfers was highlighted by consistently high negative ratios, ranging from -9.8 per cent to -19.0 per cent of GNP.

The resource gap level, which is defined as the difference between GDI and GDS, has been consistently negative during the eleven year period. The gap was the widest in 1985/86 at 44.2 per cent of GDP. (Figures 2 and 3). Although the gap was narrowed down in later years through reduction in the level of GDI rather than through increased domestic savings, the resource gap has still remained high at a level higher than 30 per cent of GDP. (Table 3)

Table 3

Tonga : Savings, Investment and Resource Gap : 1980/81 – 1990/91						
Year	Gross Domestic Investment	Gross Domestic Savings	Resource Gap	Gross Domestic Investment	Gross Domestic Savings	Resource Gap
	(Per Cent of GNP)			(Per Cent of GDP)		
1980/81	27.8	-11.6	-39.4	29.5	-12.3	-41.8
1981/82	29.8	-5.9	-35.7	31.2	-6.2	-37.4
1982/83	28.6	-1.0	-29.6	29.3	-1.1	-30.4
1983/84	23.2	-0.5	-23.7	24.0	-0.5	-24.5
1984/85	25.3	-15.0	-40.3	26.4	-15.7	-42.1
1985/86	22.9	-19.0	-41.9	24.3	-20.1	-44.2
1986/87	21.3	-10.1	-31.4	22.2	-11.4	-33.6
1987/88	21.7	-19.5	-41.2	23.2	-20.8	-44.0
1988/89	19.5	-16.5	-36.0	20.3	-17.2	-37.4
1989/90	17.9	-9.8	-27.7	18.5	-10.2	-28.7
1990/91	16.8	-15.6	-32.4	17.3	-16.1	-33.4

Source: Author's Estimates

Figure 2

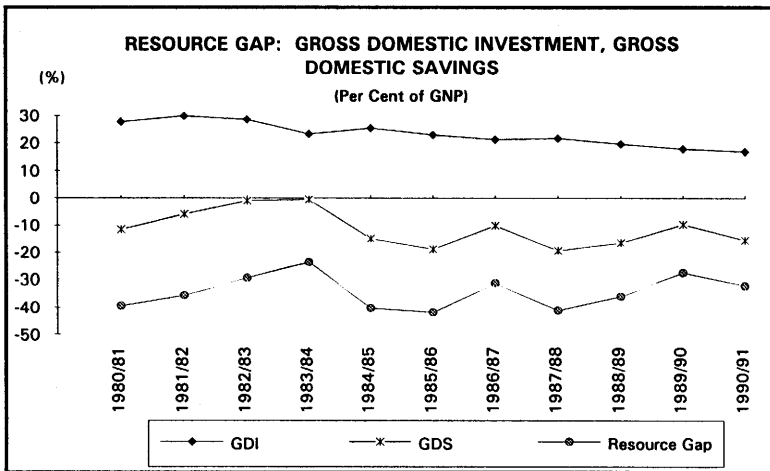


Figure 3

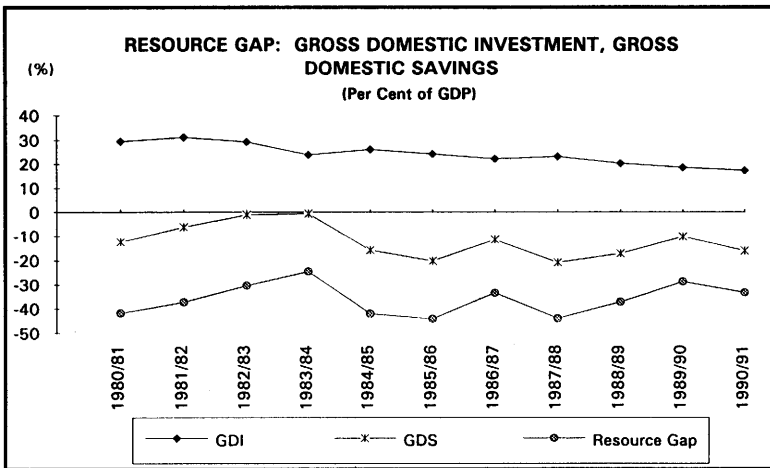


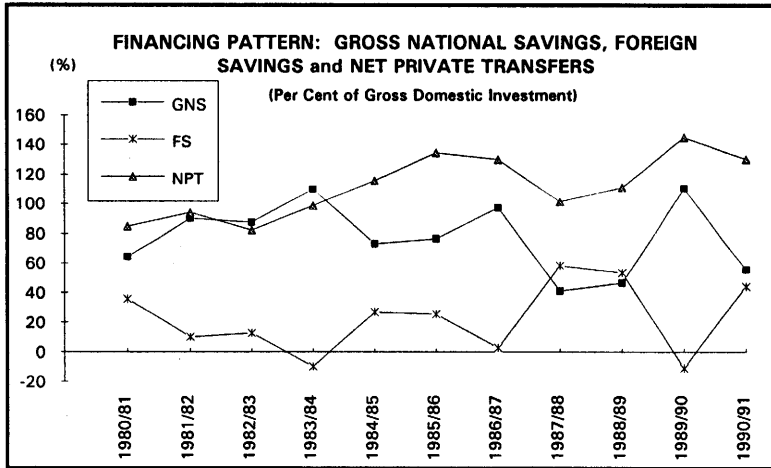
Table 4 presents the financing pattern of domestic investment. Foreign savings made a substantial supplementary contribution to finance gross domestic investment during the eleven-year period except in two years in 1983/84 and 1989/90, when the current account in the balance of payments ran surpluses due to excess inflows of net private transfers exceeding absorption in the economy. An annual gross domestic investment as a proportion of GNP declined in the mid eighties from nearly 25 per cent in 1984/85 to 23 per cent in 1985/86 and to 16.8 per cent in 1990/91, net private transfers were as high as 31.0 per cent and 21.9 per cent of GNP respectively in 1985/86 and 1990/91 (Figure 4). Thus, net private transfers far exceeded gross domestic investment from the mid eighties and part of them had obviously gone into consumption.

Table 4

Tonga : GNS, FS and NPT : 1980/81 – 1990/91 As Per Cent of GDI			
Year	GNS/GDI	FS/GDI	NPT/GDI
1980/81	64.4	35.6	84.9
1981/82	90.1	9.9	93.9
1982/83	87.4	12.6	82.2
1983/84	109.7	-9.7	98.7
1984/85	73.1	26.9	115.8
1985/86	76.4	25.6	134.5
1986/87	97.3	2.7	130.0
1987/88	41.2	58.2	101.4
1988/89	46.6	53.4	111.2
1989/90	110.7	-10.7	145.2
1990/91	55.7	44.3	130.4

Source: Author's Calculations

Figure 4



Government Savings

Government savings is defined as the difference between current revenue, excluding foreign grants and current expenditure. Savings so calculated would represent the Government's own efforts at mobilization of internal resources over its recurrent expenditures, as a contribution to capital expenditure. Current revenue, which excluded grants consists of tax revenues and non-tax revenues. Tax revenues are mainly from taxes on income and profits, and on commodities. In addition, revenue is also derived from stamp duties and business licenses and taxes on international trade, including import and export duties. Non-tax revenues comprise fees and other user charges. Current expenditure refers to salaries, wages, operation and maintenance expenditures and interest payments related to public debt.

Recurrent budget deficit had been kept to a minimum level in the first half of the eighties. There were budget surpluses, resulting in positive level of government savings, during the first five years of the period under study. However, the situation deteriorated during the next two years. The budget deficits were about 0.4 per cent and 2.1 per cent of GDP in 1985/86 and 1986/87 respectively. The reason behind these deficits was that increases in recurrent expenditures were not matched by recurrent revenues. Although the recurrent budget was in surplus in 1987/88, the subsequent years again witnessed the re-emergence of budget deficits. Salary revisions introduced and budgeted in the 1988/89 and implemented over a two-year period gave rise to unprecedented recurrent budget deficits of about 1.1 per cent and 2.8 per cent of GNP in 1988/89 and 1989/90. With increased mobilization of domestic resources through new tax measures, the recurrent budget deficit was substantially reduced in 1990/91, which was about 0.6 per cent of GNP.

Investment and Economic Growth

The data relating GDI, GNS, GDS and other variables, duly deflated by GDP deflator and their real magnitudes are given in Table 5. Their trend growth rates during 1980/81 – 1990/91 are presented in Table 6. Real GDI grew at 1.6 per cent per year, whereas real GDP and real GNP increased at 2.3 per cent and 2.4 per cent per year respectively.

Table 5

Tonga : GDP, GNP, GDI, GNS, GDS, FS and NPT in Real Terms : 1980/81 – 1990/91 (Million of Pa'anga in 1985 Prices)								
Year	RGDR	RGNS	RGDI	RGNS	RGDS	RFS	RNPT	GDP Deflator (Index)
1980/81	74.3	78.9	21.9	14.1	-9.1	7.8	18.6	72.9
1981/82	77.8	81.6	24.3	21.9	-4.8	2.4	22.9	78.7
1982/83	79.3	81.4	23.3	20.3	-0.8	2.9	19.1	85.2
1983/84	80.7	83.3	19.3	21.2	-0.4	-1.9	19.1	90.7
1984/85	86.0	89.8	22.7	16.6	-13.5	6.1	26.3	100.0
1985/86	87.8	92.6	21.2	15.8	-17.6	5.4	28.6	116.2
1986/87	90.4	94.2	20.1	19.5	-10.3	0.5	26.1	129.0
1987/88	88.7	94.8	18.1	8.5	-18.4	12.1	20.8	140.7
1988/89	89.1	92.7	16.2	8.4	-15.3	9.6	20.1	151.5
1989/90	87.3	90.5	16.1	17.9	-8.9	-1.7	23.5	168.4
1990/91	92.9	95.7	16.2	9.0	-14.9	7.1	21.0	185.3

Source: ANU, NCDS : South Pacific Economic and Social Data Base, Statistical Compendium : Tonga
February 1994 and Author's Calculations

Table 6

Tonga : Rates of Growth (1980/81 – 1990/91)		
Variables	Trend Equation	Annual Growth Rate (Per Cent)
1. Real GDP	$LRGDP = 1.213 + 0.0916 T$	2.34
2. Real GNP	$LRGNP = 1.226 + 0.0923 T$	2.47
3. Real GDI	$LRGDI = 0.927 + 0.0434 T$	1.05
4. Real GNS	$LRGDI = 0.949 + 0.0207 T$	0.51
5. Real NPT	$LRNPT = 0.875 + 0.060 T$	1.64

Source: Author's Estimates

Real GNS increased only at 0.5 per cent. Although GDI has remained as high as 20 per cent of GDP, rate of growth in recent five years has been less than one per cent. This has naturally raised doubts about the choice of investment projects and their contributions to economic growth. A part of the weak growth in GDP can be attributed to lower returns and long gestation periods of investment projects and other supply bottlenecks, which fall under the description of absorptive constraints.⁽⁵⁾ This leads us to the conclusion that it is not the mobilization of resources, including foreign aid which is critically important, as improving the allocative process itself, a recurring theme which has been highlighted in the growing literature on the South Pacific islands' economic development.⁽⁶⁾ The subject of utilization of gross national savings, supplemented by generous external assistance in terms of grants and loans from multilateral agencies has been receiving increasing attention.⁽⁷⁾

One of the suggestions put forward for mobilizing domestic resources relates to liberalization of financial markets for removing distortions and improving incentives and facilitating information flows between potential savers and financial institutions. These are expected to contribute to a greater degree of monetization. Upgrading the capability of the financial system in mobilizing greater financial resources is also expected to improve allocative efficiency, since part of the factor pricing distortions is expected to be eliminated in the process.⁽⁸⁾

A Comparative Picture

A comparative picture of investment and savings in the island countries in the region (Table 7) would be of interest. Tonga's average ratio of GDI to GDP (16.2 per cent) during the five-year period (1986-1990) was the fourth highest among the six countries. The ratio of gross national savings to GDP of Western Samoa ranked first, closely followed by Tonga. The reasons are obvious: Net inflows of private transfers of relatively high magnitudes each year have consistently enabled both Western Samoa and Tonga to experience a high national saving rate. These private transfers represent substantial net remittances estimated to be around one third of their GDP. As a result, the ratios of gross domestic savings to their respective GDP in both Tonga and Western Samoa were negative. Consequently, the ratio of domestic resource gap to GDP was the highest in the case of Tonga (38.1 per cent), followed by 36.4 per cent for Western Samoa.

Table 7

Gross Domestic Investment and Savings : 1987 - 1991 (As Per Cent of GDP)						
	Fiji	Papua New Guinea	Solomon Islands	Tonga	Vanuatu	Western Samoa
Gross Domestic Investment	16.2	23.5	30.5	27.4	34.8	29.5
Current Account Deficit (Foreign Savings)	2.4	10.8	26.1	7.3	21.4	9.5
Gross National Savings	13.8	12.6	4.4	20.1	13.4	20.5
Net Private Transfers and Factor Income	-4.3	-2.5	-1.7	30.8	1.9	27.4
Domestic Savings	18.1	15.1	6.1	-10.7	11.5	-6.9
Domestic Resource Gap	2.1	8.4	24.4	38.1	23.3	36.4

Source : Asian Development Bank Key Indicators of Developing Asian and Pacific Countries Vol. xviii July, 1992

Table 8

Tonga : Money Supply and Interest Rates : 1980/81 - 1990/91 (Millions of Pa'anga)										
Year	Currency (C) Outside Banks and Demand Deposits	Savings and Time Deposits (STD)	Total Money Supply (Ms)	C + DD MS	STD MS	STD GDP (sid)	Average Nominal Deposit Rate (Per Cent)	Inflation (Per Cent)	Average Real Deposit Rate (RDPR) (Per Cent)	1/
1980/81	NA	8.2	NA	NA	NA	15.2	6.25	14.7	-7.97	
1981/82	7.4	8.9	16.3	45.4	54.6	14.5	6.25	10.9	-4.19	
1982/83	9.6	10.0	19.6	48.9	51.1	14.8	6.25	8.3	-1.89	
1983/84	10.0	11.9	21.9	45.9	54.1	16.2	6.25	9.4	-2.88	
1984/85	10.9	16.6	27.6	39.6	60.3	19.3	6.25	1.7	4.47	
1985/86	13.3	19.5	32.8	40.5	59.5	19.1	6.25	31.3	-19.08	
1986/87	15.2	24.0	39.2	38.8	61.2	20.5	6.25	7.5	-1.16	
1987/88	15.7	22.5	38.2	41.1	58.9	18.0	6.25	11.1	-4.37	
1988/89	17.2	23.7	40.9	42.0	58.0	17.6	7.25	3.9	3.22	
1989/90	22.3	27.0	49.3	45.2	54.8	18.4	7.25	5.6	1.56	
1990/91	25.7	29.6	55.2	46.5	53.5	17.2	7.25	13.0	-5.07	

Source : International Monetary Fund : International Financial Statistics Year Book 1993
Washington D.C., and Author's Calculations

1/
Real Deposit Rate = $\frac{100 + \text{nominal rate of interest}}{100 + \text{rate of inflation}} - 1$

II Financial System and Savings

Tonga's financial sector was narrow until 1992, when the Financial Institutions Act was passed. The new Act has been enacted to enable entry of additional commercial banks, promoting competition and liberalizing the financial system. Prior to 1992, the financial system consisted of the Reserve Bank of Tonga, which is the monetary authority of the country, the Government-owned Tonga Development Bank (TDB) for providing development finance to business enterprises, and the Bank of Tonga, which was the only commercial bank, jointly owned by the Government (40 per cent), the Bank of Hawaii (30 per cent) and Westpac (30 per cent). Besides the commercial bank, there were a few cooperatives and credit unions, which were accepting deposits from their members and lending to them. There were also agents of a few overseas insurance companies, collecting premia for their insurance business. The TDB, although authorized to accept deposits from the public, has not exercised its legal ability to do so.

Thus, voluntary savings were mobilized by the only one existing commercial bank and a few cooperatives and credit unions and the agents of insurance companies. There is no provident fund scheme operating in Tonga unlike in the other South Pacific island countries where the employees, both in the public and private sectors are required by law to contribute stipulated percentages of their earnings which are matched by an equal contribution by their employers. Thus, the savings mobilized in Tonga have historically been purely voluntary.

Mobilization of Deposits

Analysis of financial savings is confined to voluntary savings. However, as available data on savings collected by credit unions is not complete so as to form a consistent time-series, the analysis is further restricted to deposits mobilized by the commercial bank as reported by the monetary authority.

Money supply (defined as currency and demand deposits, plus savings and time deposits) rose in absolute terms from 16.3 million pa'anga in 1981/82 to 55.2 million pa'anga 1990/91. Savings and time deposits (STD) increased from 8.9 million pa'anga 1981/82 to 29.6 million pa'anga 1990/91. Although STD increased threefold from 1981/82 to 1990/91, the ratio of STD to total money supply has stayed nearly the same at about 55 per cent, although in the mid eighties the ratio was about 60 per cent. Similarly, savings and time deposits as a percentage of GDP (std), has not registered any major increase over the eleven-year period and the ratio is just less than 20 per cent (Table 8).

Interest Rates

In the absence of attractive financial instruments the interest rate offered by deposit mobilizing institutions is the only incentive. However in the Tongan situation until mid-1991, when the Government decided to deregulate interest rates, market intervention kept the lending rates of interest subject to a ceiling rate of 10 per cent and for maintaining an acceptable spread the deposits were kept substantially lower than warranted. The net result has been that real interest rates were often

negative. Partly for this reason, narrow money (currency plus demand deposits) has continued to account for more than 40 per cent of total money supply.⁽⁹⁾ Table 8 presents the general movement in interest rates.

For illustrative purposes, the average rate of interest on time deposits represents the nominal interest rate offered by the commercial banks on time deposits for six months and above, which is adjusted for inflation to arrive at the real deposit rate. Due to relatively very high price level during 1980/81 to 1983/84 as well as during 1985/86 to 1987/88, the real deposit rates were negative. Part of the negative domestic savings has been attributed to negative rates of interest and high consumption propensities encouraged by net remittances from overseas. The next section deals with the saving behavior of Tonga and seeks to find out its determinants.

III A Simple Model of Saving Behavior

Factors Influencing Saving

Literature on saving behavior, which is defined for the purpose of this paper as saving rate (ratio of GDS to GNP) has highlighted, amongst different factors, the roles of rate of growth of real income, per capita income, demographic influence, real rate of interest and foreign capital inflows.⁽¹⁰⁾ Since population figures are not accurate, as annual migration changes the population each year, per capita income estimated by using annual population growth rate based on past census projections

is not reliable and hence is not entered as a determinant.

Demographic factors are usually defined in terms of dependency rate as percentage of population in the 0-14 and 65 years and above age brackets. The hypothesis is that dependency rate is expected to be negatively correlated with saving rate since current consumption is directly related to the proportion of children in the total population.⁽¹¹⁾ The real interest rate, adjusted for the negative influence of inflation on savings and signifying the real yield on money is the real deposit rate. It is postulated that the real rate of interest and saving rate are positively correlated.

Foreign Savings

Foreign capital inflows are considered as a substitute for national as well as domestic savings and hence the relationship between saving rate and the ratio of foreign savings to GNP is hypothesized to be negative.⁽¹²⁾ Such a hypothesized negative relationship might be found surprising since it is expected that much of the foreign savings would be used to finance public investment and not consumption. One possible implication would be that the ready availability of foreign aid enables the government to reduce its tax efforts giving rise to fiscal deficits. It has also been noted that reliance on foreign saving might reduce saving rate by weakening the incentive and pressure to save.⁽¹³⁾

However, there has been considerable debate over the direction of the causality, as there might be a bias of simultaneity involved in the relationship. Empirical studies, using simultaneous equations model

have provided support for the substitutability hypothesis in that a components of foreign savings (foreign aid, foreign private investment and all other foreign inflows) exhibited negative coefficients.⁽¹⁴⁾ To ensure that no simultaneity bias arises, foreign savings ratio is entered as an exogenous variable together with other exogenous variables including rate of growth, per capita income and real rate of interest.

The Model

The saving function for empirical investigation purposes for Tonga and other Pacific island countries, has to take care of their unique cultural factors. These include the customary living conditions of communal sharing and caring for the members of the extended family system, beyond the normal conditions of caring for children and the elderly above 65. In such circumstances, the relevancy of dependency rate as an explanatory variable to explain the saving behavior is rather limited.

The saving function can, thus, be written as:

$$gds = f(g, npt, fs, RDPR)$$

where, gds = domestic saving rate (GDS/GNP);

g = rate of growth of real GDP;

fs = foreign saving rate (FS/GNP); and

$RDPR$ = real deposit rate.

The financial saving rate, std (ratio of savings and time deposits to GDP) can be expressed as a function of independent explanatory variables in a similar way.

The data which were utilized for testing the model by fitting appropriate regression equations by ordinary least squares method covered the eleven-year period (1980/81-1990/91). The regression results are presented in Table 9. Time trend was also added in

Table 9

Tonga : Results of Regression Analyses (1981/82 - 1990/91)
(i) Dependent Variable : gds (1980/81 - 1990/91)

Equation	Constant	fs	npt	g	RDPR	T	Adj R Sq	F Ratio	Degrees of Freedom
1.	26.996 * (4.3333)	-1.059 * (-7.702)	-1.032 * (-4.398)	0.242 (1.043)	0.092 (0.845)	-1.188 (-6.048)	0.915	27.831	6
2.	28.422 * (4.856)	-1.089 * (-8.856)	-1.104 * (-5.165)	0.278 (1.253)	-	-1.164 (-6.136)	0.910	21.349	5
3.	25.259 * (4.177)	-1.046 * (-7.58)	-0.941 * (-4.291)	-	0.113 (1.052)	-1.199 (-6.069)	0.909	26.034	6
4.	26.742 * (4.514)	-1.082 (-8.049)	-1.014 * (-4.843)	-	-	-1.169 (-5.935)	0.907	33.830	7

(ii) Dependent Variable : std (1981/82 - 1990/91)

Constant	Std	g	RDPR	npt	T	Adj R Sq	F Ratio	DW	Degrees of Freedom
1.	-2.396 (-0.455)	0.016 (0.100)	0.112 (1.397)	0.337 * (2.137)	0.135 (0.541)	0.554	3.232	1.188	5
2.	-2.518 (-0.498)		0.111 ** (1.558)	0.342 * (2.589)	0.139 (0.628)	0.642	5.034	1.191	6
3.	-3.455 (-0.754)		0.128 * (2.043)	0.308 * (2.693)	-	0.678	7.320	1.244	7

(Figures in parentheses denote calculation 't' values)

* denotes significance at 0.05 level by one tailed 't' test

** denotes significance at 0.10 level by one tailed 't' test

appropriate cases when certain variables were left out and under the assumption that their influence on the dependent variable is a smooth function of time.

Domestic Saving Rate

In the specific context of Tonga, net private transfers have contributed in a major measure to the boosting of domestic saving rate. On this consideration, npt was entered as an independent variable, besides the rate of foreign savings (fs). The hypotheses which were sought to be tested were whether npt and fs were substitutes for domestic savings or whether they played a supplementary role. The regression equation with all the explanatory variables emerged satisfactory in terms of a fairly high coefficient of determination duly adjusted for degrees of freedom. Further, all the estimated parametric coefficients had their signs in accordance with the theoretically expected signs.

However, it was found that the coefficients of growth (g) and real deposit rate (RDPR) were not found statistically significant, the level of significance being chosen at 5 per cent, possible explanation for this result would be actual annual changes in these two independent variables were of such of an inconsequential nature that they had no significant influence on the domestic saving rate. It was, therefore, decided to drop the two variables from the estimation procedure. Regression analyses were conducted retaining fs, npt, and time trend. The latter was specifically included under the assumption that the

influence of the left out explanatory variables on the dependent variable is a smooth function of time. The acceptable equation was as follows:

$$\text{gds} = 26.742 * -1.082 \text{ fs} - 1.014 \text{ npt} * -1.169 \text{ T} \\ (4.514) \quad (-8.0491) \quad (-4.843) \quad (-5.935)$$

$$\text{Adj R sq} = 0.907 \quad \text{F ratio} = 33.830$$

Degrees of Freedom: 7

(Figures in parentheses denote 't' values)

* denotes significance at 5 per cent level

The results confirm that both fs and npt are significant independent variables in explaining the variations in domestic saving rate. Nearly 91 per cent of variations in the annual domestic saving rate are explained by the variations in all the included explanatory variables. Further, the roles of foreign savings and net private transfers are clearly established as substitutes for domestic savings by two-tailed 't' test. Increase in foreign saving rate by one per cent, holding other constant, reduces domestic saving rate by 1.08 percentage point. Similarly, one per cent increase in the ratio of net private transfers to 1.01 percentage point in domestic saving rate. The time trend, which is also statistically significant confirms the declining trend in domestic saving rate.

Financial Savings

Financial saving rate (ratio of saving and time deposits to GDP) was regressed upon the following independent explanatory variables: g, RDPR, npt and time trend. The growth rate and time trend were found statistically not significant. Hence a fresh equation with only RDPR and

npt was estimated, which was found acceptable. Both RDPR and npt had the theoretically expected positive signs. Further, they were found statistically significant, confirming their direct influence on financial saving rate. The estimated equation is the following:

$$\text{std} = -3.455 + 0.128 \text{RDPR}^* + 0.308 \text{npt}^*$$

$$(-0.754) \quad (2.043) \quad (2.693)$$

$$\text{Adj R sq} = 0.678 \quad \text{F ratio} = 7.320$$

Degrees of Freedom: 7

(Figures in parentheses denote 't' values)

* denotes significance at 5 per cent level.

The results are interesting: they indicate that real deposit rates indeed had a positive influence on financial savings. Further, net private transfers had a positive influence on financial savings, although they seem to have had a negative influence on domestic saving rate.

IV Conclusions

Tonga's annual investment during the eleven-year period (1980/81–1990/91) has been sustained by national savings which has been substantially supported by net private transfers, being mainly remittances from abroad. From the mid-eighties onwards, when the ratio of domestic investment to GNP declined, net private transfers far exceeded the financing requirements. In certain years, excess national savings resulted in outflows are reflected in current account surpluses.

In the rest of the period, apparently the excess of net private transfers over investment was spent on consumption.

Domestic savings has been consistently negative. Analyses of domestic saving behavior for the eleven year period (1980/81-1990/91) revealed the following results: (i) variations in the rates of growth of the economy during the period of study did not have any impact on saving behavior; (ii) real deposit rate adjusted for inflation did not have any influence on saving rate; (iii) both foreign savings and net private transfers were substitutes for domestic savings. Analysis of financial savings restricted to savings and time deposits in the commercial banking system, showed that (i) variations in growth rates of the economy are of no consequence; (ii) real deposit rate was a significant determinant; and (iii) net private transfers were a positive influence on financial savings.

There has been in recent years a declining trend in external assistance to the South Pacific region from the major metropolitan countries, due to reordering of priorities of foreign aid programs as well as continued recessionary conditions in these countries. Further, improved standard of living in Tonga through high consumption may also harden the terms and conditions under which concessional assistance from the lending agencies is presently available.

In these circumstances, certain positive actions are required. It is necessary for the authorities to step up their current on-going campaign for encouraging savings programs, beyond the island of Tongatapu where the capital is located. The school savings programs, in particular,

need to be pursued more vigorously in the outer islands. With the liberalization of the financial sector after the enactment of the Financial Institutions Act in 1992, which has facilitated entry of additional commercial banks, competition is expected to facilitate the narrowing of spread between lending and deposit rates. If interest rates are left to be determined by market forces, real deposit rates would become positive and promote financial savings. Net private transfers have had a positive influence on financial savings. Hence, what is required is an appropriate set of institutional measures, including spread of rural branches of commercial banks, incentives in terms of tax breaks for savers and consideration of setting up national provident fund covering employees in the public and private sectors. Furthermore, government savings have to be positive keeping the recurrent expenditures well below current revenues.

Notes

(1) This follows a similar approach adopted in recent empirical studies on savings in developing countries. For methodological issues, Economics Office, *Improving Domestic Resource Mobilization through Financial Development*, Appendix 1, Manila: Asian Development Bank (ADB), 1985 and Chandavarkar, Anand, "Savings Behavior in the Asian-Pacific Region", *Asian-Pacific Economic Literature*, Vol. 7 No. 1, 1993, p. 9 for different approaches to measurement of savings.

(2) Helmers, F.C.H., "National Accounting Identities", and Dornbusch, Rudiger, "Balance of Payments Issues" in Dornbusch and Helmers (Eds), *The Open Economy: Tools for Policy Makers in Developing Countries*, Washington D. C.:

The World Bank, 1988, pp.375 - 404 and pp. 37 - 57.

(3) Asian Development Bank, *Key Indicators of Developing Asian and Pacific Countries*, Vol. XXIV, 1993.

(4) Lindauer, D.L. and Velinchik, A.D., "Government Spending in Developing Countries", *The World Bank Research Observer*, Vol. 7, No. 1, 1992, pp. 59 - 78.

(5) Little, I.M.D., *Economic Development: Theory, Policy and International Relations*, New York: Basic Books 1982.

(6) World Bank, *Toward Higher Economic Growth in Pacific Island Economies: Lessons from the 1980s*, and Bauer, P., Siwatibau S and Kasper, (Eds), *Aid and Development in the South Pacific*, Auckland and Canberra: The Centre for Independent Studies, 1991.

(7) This was one of the subjects discussed in the *Conference on Pacific Islands at Cross Roads?* held at Griffith University, Nathan Campus, Queensland, November 1992 which was sponsored by Asia Pacific Development Center, Kuala Lumpur and National Center for Development Studies, Australian National University.

(8) Abe, S. *et.al*, "Financial Liberalization and Domestic Savings Economic Development", *Pakistan Development Review*, (Autumn 1977), pp. 293-302, and Fry, M.J., "Money and Capital and Financial Deepening in Economic Development", *Journal of Money, Credit and Banking*, November 1978, pp. 464-475.

(9) Christopher Browne and Douglas Scott, *Economic Development in Seven Pacific Island Countries*, Washington D.C., IMF, 1989 p.143.

(10) Mikesell, R.F. and Zinser, J.E., "The Nature of Savings Function in Developing Countries: A Survey of the Theoretical and Empirical Literature", *Journal of Economic Literature*, Vol. 11, (March 1973), p. 126 and Gersovitz M., "Savings and Development," in Chenery, H. and Srinivasan, T.N.,(Eds) *Handbook of Development Economics*, Vol. 1., Amsterdam : North Holland, 1988 pp. 475-418. Chandavarkar, Anand, "Saving Behavior in the Asian Pacific Region" *Asian - Pacific Economic Literature*, Vol. 7, No. 1, May 1993, pp. 18-19.

(11) Leff, N. "Dependency Rates and Saving Rates" *American Economic Review*, Vol. 59, December 1969, pp. 886-896.

(12) If foreign saving is a substitute for national saving, it will have a significantly

negative sign in the regression equation with saving rate as a dependent variable; if it is a complement, it will have a significant positive sign; and if additive, the parameter will be around zero. See Singh, Sateesh K, *Development Economics*, Lexington, Massachusetts: Lexington Books, 1975, p. 124.

(13) Chandavarkar, Anand, *op.cit.*, p. 15 and Asian Development Bank, *Asial Development Outlook 1990*, 1990, p. 30.

(14) These studies include Gupta K.L., "Foreign Capital Inflows, Dependency Burden and Saving Rates in Developing Countries: A Simultaneous Equation Model." *Kiklos*, Vol. 28, No: 2, 1975 and Weisskopf, T.E., "The Impact of Foreign Capital Inflow on Domestic Savings in Underdeveloped Countries., *Journal of International Economics*, Vol. 2, No: 1, February 1972.