

Food security in a South Pacific context: the case of rice in Vanuatu

Tim Foy

Rapid urbanization in Vanuatu is causing fundamental shifts in food consumption patterns. The high cost of locally produced foods requires urban households, particularly the poor, to consume a diet centred around relatively cheaper imported items, of which rice is by far the most important. Rice imports, which already represent a significant claim on limited foreign exchange resources seem destined to increase; Vanuatu's continued ability to finance these imports is, however, questionable. Future policy may dictate that measures are taken to reduce food imports, yet the food security of the increasing number of urban poor requires that the supply of cheap imported rice is maintained. A clear dilemma exists.

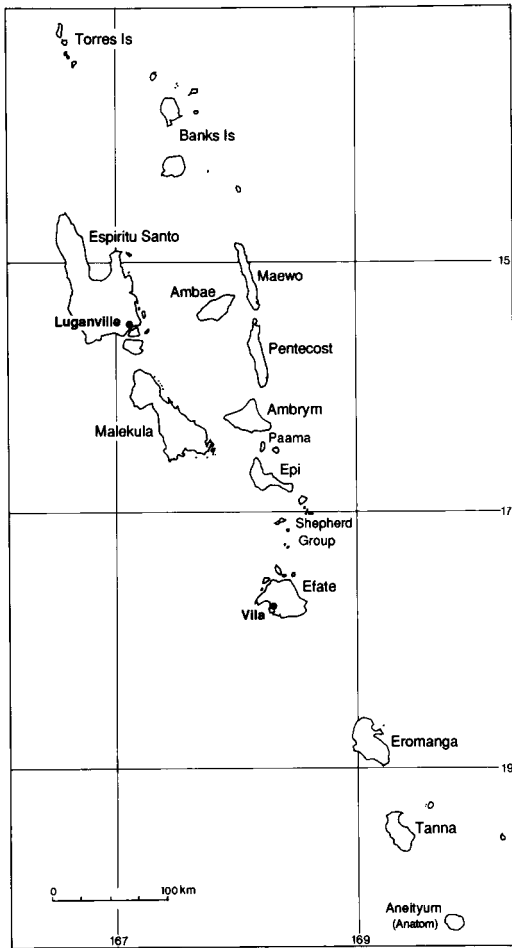
Tim Foy is a principal agricultural economist with the Ministry of Agriculture in Vanuatu.

Rice and other imported foods are a central feature of consumption patterns in both rural and urban Vanuatu. As rice is not grown in Vanuatu, records of annual imports provide an accurate source of information on consumption. Analysis of these data over the last 25 years reveals that high levels of per capita rice consumption have been a long standing feature of the food consumption pattern (Table 1). The average annual consumption of 38 kg between 1965 and 1990 is sufficient to have provided an estimated 14 per cent of adult calorie needs, a figure which would be even higher if adjusted for the generally lower energy requirements of children. This is a remarkably high level of consumption of an entirely imported substitute for traditional

foods in a country capable of achieving food self sufficiency.

Rice imports represent a significant foreign exchange cost. Between 1980 and 1990 rice was consistently the most important imported food item; representing on average over 4 per cent of total imports and over 16 per cent of the value of all visible exports (Table 2). In addition to this economic cost, consumption of rice is cited in Vanuatu, and elsewhere in the Pacific, as an indication of the abandonment of traditional food and agricultural values, and of the failure of food production and marketing systems to match demands placed upon them (McGee 1975).

Vanuatu



Determinants of rice consumption

The available data on household expenditure patterns suggest that rural rather than urban demand has been the primary determinant of national consumption and hence import levels (Vanuatu, National Planning and Statistics Office 1985,1986). It is a popular misconception that eating rice is an exclusively urban habit.

Estimated per capita consumption in Vanuatu's two towns (Port Vila and Luganville) is markedly higher than that in rural areas. However, the predominance of rural ni-Vanuatu in the population (82 per cent in 1989) has ensured that the majority of rice has been eaten in rural areas. For example, in 1985, a year of particularly high rice imports, estimated rural consumption comprised over 70 per cent of the national total, although rural per capita consumption at 43 kg was significantly lower than the 78 kg estimated for urban areas.

Rural consumption

Regional variations can be related to the availability of cash. It is generally true that households in local government regions with higher per capita production of copra (Vanuatu's principal cash crop) spend more on food than those in areas with lower cash crop production. In general terms, rice is eaten in rural areas out of preference when households have the income to buy it. There is certainly no indication of any lack of availability of traditional foods in rural areas.

Table 1 Annual per capita consumption of rice, 1965-90 (kg per annum)

	Annual per capita consumption
1965	38.3
1970	35.8
1975	32.3
1980	35.1
1985	49.3
1990	26.9
Average 1965-90	38.1

Source: Derived from data supplied by the National Planning and Statistics Office, Port Vila.

Table 2 Rice imports in relation to principal external trade indicators, 1980-90

	Rice imports			
	Tonnes	Per cent of total imports	Per cent of food imports	Per cent of visible exports
1980	4,132	4.7	17.0	19.2
1985	6,689	4.6	23.6	15.2
1989	4,889	3.8	24.6	18.5
1990	3,931	2.6	21.5	17.4
Average 1980-90	4,937	4.3	22.2	17.4

Source: National Planning and Statistics Office, Port Vila.

Urban consumption

The relatively high consumption of rice in urban areas (and the corollary of lower consumption of 'traditional' local foods) is frequently assumed to be a consequence of consumer preference related to convenience, or prestige associated with an imported food. Rice has convenience advantages over traditional staples: it is easier to cook, carry and store and provides a popular source of dietary variation.

These non-price advantages may well be important for urban consumers, however, they are certainly augmented by its low price relative to locally produced foods. In terms of calories obtainable per unit cost, rice compares very favourably with such traditional food items as bananas, yams, sweet potato and taro.

This price advantage is important to poor urban households with limited financial resources. In 1985, while all urban households spent more on rice than traditional staples, average expenditure by those on low incomes was over twice that of the high income group (Table 3), and represented a level of consumption sufficient to provide over 26 per cent of daily adult calorie needs. Continued access to rice at affordable prices is therefore central to maintaining urban household food security, particularly that of the poorest.

Table 3 Annual household expenditure on rice and local starches, Port Vila, 1985 (vatu)

	Expenditure		Adult daily calorie needs met by rice (per cent)
	Rice	Local starchy food	
Low income	19,878	5,758	26.4
High income	8,116	3,342	9.1

Source: National Planning and Statistics Office, *Family Income and Expenditure Survey of Urban Areas 1985*, Port Vila, 1985.

Future trends in rice consumption

Per capita rice consumption in Vanuatu has remained comparatively static over the last 25 years. Rice has been mainly consumed in rural areas by those with access to money. Total urban demand has been less important, reflecting the relatively small proportion of the population urbanized. This situation is likely to change in the future as urbanization develops and demand for rice and other imported foods correspondingly increases.

Rapid urbanization is probably the most significant feature of Vanuatu's recent demographic history. Between the first national census in 1967, and the third and most recent in 1989, Vanuatu's urban population increased by 340 per cent. The proportion of total population resident in urban areas has risen over the same period from 10 per cent to over 18 per cent. Almost all of this increase is attributable to internal migration from rural areas. There is evidence to suggest that the pace of urbanization may even be accelerating. Between 1986 and 1989 Vanuatu's urban population is estimated to have grown at an astonishing annual rate of 10.8 per cent (Vanuatu, National Planning and Statistics Office 1989).

As a result of this demographic change an ever increasing proportion of Vanuatu's population will become dependent upon

Table 4 Estimated future rice consumption in Vanuatu

	Total consumption (tonnes)	Urban consumption (tonnes)	Urban contribution to total (per cent)
1980	4,132	1,229	30
2000	8,511	4,080	48
2010	13,864	8,408	61
2020	24,045	17,330	72
2030	43,984	35,717	81

Assumptions: (1) The rural ni-Vanuatu population continues to increase at an annual rate of 2.1 per cent per annum, and the urban ni-Vanuatu population at 7.5 per cent per annum. These were the rates recorded between 1979 and the 1989 census. (2) Annual urban per capita consumption remains at the level of 78 kg per capita estimated by the 1985 Family Income and Expenditure Survey, and rural consumption remains at the estimated 1980-90 average level of 30.4 kg. (3) Consumption of non ni-Vanuatu (expatriates) is omitted.

purchased rather than self produced foods: in particular rice. Unless urban consumers switch expenditure towards traditional foods, or there is a concomitant decline in rural consumption, national demand and hence imports of rice will inevitably rise.

Should the growth of urban population continue at the rate seen in the last 10 years, and per capita consumption (both rural and urban) stay at present estimated average levels, total demand for rice will increase by a factor of three within 20 years, and 10 within 40 years (Table 4). It is also apparent that urban consumption will become increasingly more important relative to that in rural areas, and will soon become the primary determinant of total demand.

Such an extrapolation is clearly simplistic and its assumptions questionable: urban growth could be slower in the future, or the importance of rice in urban diets may decline. However, the model remains a useful illustration of the potential impact of changing population distribution (urbanization), on the demand for just one imported food.

Food security implications of rising rice imports

Rice plays a vital food role, especially for the urban poor. Safeguarding access to it is therefore a food security issue, yet Vanuatu's ability to match burgeoning rice imports with additional export earnings cannot be guaranteed.

Foreign exchange earnings remain heavily dependent upon copra which comprised 63 per cent of Vanuatu's total exports over the period 1980-90. Copra exports have shown no increase in value or (perhaps more alarmingly) volume in recent years. International copra prices have been in long-term structural decline since at least the end of World War II, while export volumes are little, if any, above those recorded 20 years ago. The future price outlook for copra as for most other primary commodities, including those promoted in order to diversify export earnings, is distinctly pessimistic.

Even if cash crop production is expanded, this does not in itself improve the national ability to pay for food imports. A significant proportion of income receipts from additional

cash crop production is likely itself to be spent on imported foods. The available evidence suggests that present rural rice consumption levels are primarily a reflection of relatively high consumption amongst a comparatively small proportion of the rural population. Considerable scope exists for increased consumption of rice as cash crop development continues to extend throughout rural Vanuatu.

The development of cash crops which are not internationally marketed, such as domestically consumed cattle and notably kava (*Piper Mythsticum Forst*), the roots of which are used to produce a drink which finds a ready market in Vanuatu's urban areas, further compounds the problem. Expanded production of such products will generate income to purchase rice (and other imported foodstuffs) without directly increasing foreign exchange earnings. Furthermore, since such developments may be the result of producers switching away from traditional (and exported) cash crops, foreign exchange earnings may fall.

Food policy

Present food policy

Food and nutrition issues figure prominently in Vanuatu's second development plan (Vanuatu, Republic of 1987). Reducing the national dependency on imported foods has been a prime objective, and a number of strategies have been advanced in pursuit of it. These include 'new' agricultural policies which seek a balance between cash and food crop development; nutrition education campaigns aimed at promoting local foods; and perhaps most significantly the imposition of tariffs on imported foods.

Agricultural policies which seek to develop food production as well as stimulate cash crops (for example, intercropping), will in the first instance do nothing to reduce rural rice consumption. Rural households eat rice in preference to traditional foods because they wish to and have the income to do so. It is not eaten because of a lack of access to traditional foods.

Nutrition education is unlikely to be effective in reducing urban rice consumption, particularly amongst the poor who are unable

to afford a more varied diet based around locally produced energy sources.

A 25 per cent tariff on rice was first introduced in 1987 in a direct effort to discourage consumption. The degree to which this, or any tariff, will succeed depends on the extent of the price rise it causes, and the price elasticity of demand for that good—the extent to which consumption responds to a change in price. This latter factor is likely to vary between households with respect to the ease with which alternative goods can be substituted. In the case of food, this ease of substitution will also determine the tariff's impact on household food security.

For rural households with generally easy access to alternative home produced foods, substitution will be relatively easy. A tariff on rice, which is essentially a substitute for these foods, can therefore achieve the objective of dampening demand with no adverse impact on household food security.

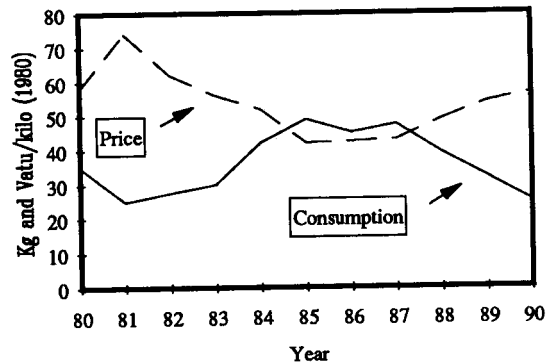
The situation is very different in urban areas where the price elasticity for rice is likely to be much lower. Substitution will by necessity be with another purchased food, and will only occur if the tariff succeeds in leaving rice more expensive relative to local foods. Given the extent of the present price advantage rice offers, a very considerable increase in its price would be required for this to occur.

In Vanuatu, the tariff has not reversed the existing structure of relative prices to favour local produce. Untaxed local foods have therefore remained relatively more expensive and no inducement to substitution has been given. The tariff has, however, required urban households to spend more to buy the same quantity of rice. Those unable to meet this higher food bill are obliged to reallocate expenditure away from 'less important' items (including some foods), and towards obtaining basic calories. Since rice remains the cheapest energy source its consumption may ironically have increased. If such a reallocation cannot be made, and the opportunity for the urban poor to do so is limited, reductions in food consumption may occur. Any suppression in urban demand for rice thus achieved will have been through an income rather than a substitution effect with clear adverse

implications for household food security. In so far as the tariff represents a significant level of taxation on the poor, concern could also be expressed on equity grounds.

As far as assessing the overall success of the tariff is concerned, the available evidence suggests that rice consumption is price elastic. The implication of this is that the tariff is likely to be an effective means of reducing demand. The relationship between per capita consumption and retail prices (using Port Vila prices as a national proxy) is depicted in Figure 1, and in the regression equation presented below. This shows that a reasonably good relationship exists between price and per capita consumption: a finding consistent with the premise that the majority of rice has been eaten in rural areas where demand can be presumed to be relatively price elastic.

Figure 1 Per capita rice consumption and constant consumer rice prices, 1960-90



Source: Data supplied by the National Planning and Statistics Office, Port Vila.

Annual per capita rice consumption
(kg per year) = $78.8 - 0.8 \text{ price per kg}$
(9.3) (5.1)

$R^2 = 0.75$, $F = 26.4$; t values in parentheses.

The considerable reduction in per capita consumption and hence imports recorded from 1987 onwards (see Table 2) cannot, however, solely be attributed to the influence of the tariff. The cost of importing rice has itself risen since the tariff's introduction in 1987 (Table 5). Retail prices have increased even without the influence of the tariff. Nevertheless, the extent of the price elasticity

suggested above indicates that the tariff is likely to have accounted for at least some, if not all, of the reduced demand, and it remains an effective means of reducing consumption.

Table 5 Cost of imported rice, 1980-90

	CIF cost of imported rice (vatu/tonne)
1980	40,900
1985	44,700
1986	42,756
1987	41,347
1988	57,912
1989	60,953
1990	70,974
Average 1980-90	53,339

Source: Calculated from data supplied by the National Planning and Statistics Office, Port Vila.

The measure of the tariff's success, however, should not simply be in terms of its achievement in curtailing rice imports. Equity and food security implications must surely come into question. Furthermore, the tariff provides no long-term guarantee of continued success. As the urban population becomes proportionately more important, so the tariff will become progressively less efficacious; unless opportunities for substitution with other foods are available, or the tariff is set at a level which reverses the ratio of local staples to rice. This is irrespective of any equity, welfare or household food security consideration.

Future policy options

Vanuatu's policymakers are faced with a dilemma. Rising rice imports ideally need to be contained, yet without jeopardizing the food security of an increasingly urbanized population dependent on its continued availability at affordable prices. A number of options can be identified. These fall into three categories:

- the development of a local import substituting rice industry;
- measures aimed at reducing, or at least containing household demand for rice;
- efforts aimed at enhancing Vanuatu's ability to pay for rice imports through the development of foreign exchange earning sectors.

From a national perspective the development of a local import-substituting

rice industry offers little immediate prospect of success. Cereal production is not a traditional aspect of Melanesian farming systems at the smallholder level, and it seems unlikely to become so. Large commercial schemes which have been attempted in several countries of the region, provide a dismal record of failure (Joughin 1986).

Measures aimed at stemming demand for rice will be successful to the extent that households in rural areas can be persuaded not to buy it, and urban households can be offered affordable and acceptable alternatives to it.

Reducing consumption in rural areas appears limited to campaigns aimed at persuading consumers away from rice, or through the continued use of the tariff. There is little more that can be done to actively reduce rural rice consumption.

Reducing demand in urban areas fundamentally means improving the availability of cheap local foods in markets by encouraging more commercial production and marketing of food in the hinterland of urban areas. An increase in food production is not in itself sufficient: that food must also be marketed at prices that are attractive. If successful this widening of effective food options would also enhance urban household food security. Furthermore, the development of a commercial horticulture sector provides significant opportunities for income generation in rural areas.

This approach is intrinsically appealing but far from straightforward. In addition to the more obvious problems attributable to the bulkiness, perishability and high costs of transporting local foods, Melanesian food markets have long been identified as not conforming to the basic precepts of neo-classical economic theory (Brookfield 1969). They are said to be 'inefficient', as evidenced by the lack of bargaining and preference of vendors for taking unsold produce home rather than reducing the price to induce a sale. The result is a lack of accommodation between buyers, and sellers and the market fails to 'clear'. This does not immediately indicate an environment conducive to the development of a more commercially oriented food sector, although other, more recent studies from Papua New Guinea suggest a

more dynamic and developing level of commercial activity can and has developed (Joughin 1988).

Even if the prices of traditional foods in urban markets can be reduced, their bulkiness, poor storability, and more time consuming preparation, may offset some of the incentive offered by reduced prices. The extent, if any, to which this occurs will depend upon the degree to which changes in consumer preference towards rice are determined by changes in relative prices alone, and how much by non-price factors such as taste and convenience. The development of root crop based 'convenience' foods, such as manioc flour, is one approach to challenging the non-price attributes of rice. The success of such a development will depend not simply upon consumers' taste, but also on the price at which they can be produced. If the prices of unprocessed traditional foods remain close to that of rice, a processed product is unlikely to offer consumers an acceptably priced substitute.

Given that measures aimed at reducing consumption are likely to be either ineffectual, or unacceptable, policymakers may seek to develop foreign exchange earning sectors to ensure that the rice import bill can be met. Ironically, in so far as such efforts will presumably include measures to stimulate cash crop production, they may themselves aggravate the situation by further encouraging rice consumption through raising rural incomes.

The review of policy options (existing and possible) indicates that continued use of a tariff is probably the most effective, and certainly quickest, remedy available should policymakers wish to contain rice imports. However, this route implies a cost to the urban poor in the short run, and continued urbanization will increasingly reduce its usefulness unless the relative price of local foods falls in urban markets.

The obvious, and perhaps only composite/compromise policy in the short term, seems to be the continued restraint of rural demand, through retention of a tariff, but with the introduction of concomitant measures aimed at moderating its adverse impact on the urban poor. Subsidizing rice

prices in urban areas, or the introduction of a food stamp system are possible ways of achieving this. However, in addition to being an essentially symptomatic treatment of a more basic problem, these would represent a significant and almost certainly rising cost, with the added disadvantage in the case of a general subsidy—if this could be achieved for just urban areas which seems unlikely—of benefiting all consumers, rich or poor.

The only viable accompanying policy to the tariff in the short term, and the fundamental key to achieving food security in the long term, is to reduce the price of local foods relative to rice; but by a process of levelling down rather than the levelling up practised to date. Urban consumers would then be afforded the greater diversity in food options essential if they are ever to substitute local foods for rice. This can only be achieved by encouraging the more intensive production and marketing of those foods.

References

- Brookfield, H.C. (ed.), 1969. *Pacific Market Places*, Australian National University, Canberra.
- Joughin, J., 1986. 'Rice in Papua New Guinea—an Economic Evaluation', *Harvest*, 12:10-15.
- Joughin, J., 1988. 'Food Prices in Papua New Guinea - A Guide to the Changing Urban Diet', *Papua New Guinea Medical Journal*, 31:133-40.
- Malcolm, S., 1952. *Food Research in the New Hebrides*, South Pacific Commission, Noumea, New Caledonia.
- McGee, T.G., 1975. *Food Dependency in the Pacific: A Preliminary Statement*, Occasional Paper No.2, National Centre for Development Studies, Australian National University, Canberra.
- Vanuatu, National Planning and Statistics Office, 1985. *Family Income and Expenditure Survey of urban Areas 1985*, Port Vila.
- Vanuatu, National Planning and Statistics Office, 1986. *Report of the Agricultural Census 1983-84*, Port Vila.
- Vanuatu, National Planning and Statistics Office, 1989. *Vanuatu National Population Census: Main Report*, Port Vila.
- Vanuatu, National Planning and Statistics Office, 1991. *Report of the Vanuatu National Population Census, May 1989*, Port Vila.
- Vanuatu, Republic of, 1987. *Second National Development Plan 1987-1991, Volume 1*, Port Vila.

Food security: a comment

Kevin A. Parton and Euan Fleming

The article by Foy makes a useful contribution to the debate about food self sufficiency both in Vanuatu and in the South Pacific region in general. There are, however, two related aspects that we feel deserve more prominence than Foy gives them. These are:

- the advantages of the option that involves no policy intervention; and
- the discouraging results from attempts to introduce rice elsewhere in the region.

With respect to the first issue, the imposition of a tariff (or increase of an already existing tariff) on rice imports has economic efficiency aspects that deserve more consideration. The tariff may encourage resources to shift from export crop production into production of food. Given that such resources would not move without the tariff, there is a *prima facie* case that there are efficiency losses from the tariff that spill over into adverse balance of payments effects (see Harris (1984) for a more complete exposition).

A significant advantage of allowing a staple like rice to enter free of tariff is that rice prices, the general price level and wages are kept lower. There would then be a feed-forward effect to stimulate exports.

From a macroeconomic perspective, a balance of payments disequilibrium arising from an increase in rice imports following removal of the tariff would lead to a sequence of positive effects on the export side and a dampening effect on the import side. The increase in volume of lower priced rice imports would probably lead to a combination of lower domestic money supply and less domestic inflation. This

simultaneously would tend to encourage exports and reduce demand for imports.

There continues to be considerable support for import-substituting rice production throughout the Pacific. The issue is discussed at length by Yen (1980), Harris (1984) Jarrett (1985) and Shaw (1985), and only a few illustrative cases are mentioned here to underline Foy's arguments against import substitution.

Cultivation of irrigated rice commenced in the Solomon Islands in the 1960s, on

Guadalcanal Plains. As a result of a joint venture between the Solomon Islands Government and a foreign company, a major development effort took place in this area in the late 1970s.

Production was highly mechanised and intensive, with a high use of purchased inputs. Cultivated area of irrigated rice grew from 89 hectares in 1971 to 1637 hectares by 1981 (Solomon Islands, Statistics Office 1983). It thereafter declined until production ceased in 1985. Production was beset by problems of pests and diseases, and poor financial returns.

Production of rice was first contemplated in Papua New Guinea at the turn of the century. Sporadic but widespread dryland rice production by villagers continued in the north coast region in the inter-war and early post-war years (Allen, undated). Low returns to production in the 1950s discouraged production and led to falls in output. Production eventually ceased as smallholders turned to other cash crops. As Allen (undated:118) observed:

**'advantages of the
option that involves
no policy intervention'**

Economically rice remains an extremely marginal crop for smallholders. It returns the lowest remuneration to growers of all the cash crops.

Efforts to introduce rice growing still persist. Shaw (1985) reported that 6 per cent of the time spent on research by the Department of Primary Industry in 1981 was devoted to rice production, and there is also Taiwanese funding of rice research near Lae.

Rice has been grown in Fiji for over a century. The practice of rice cultivation was introduced with the indentured Indian labourers between 1879 and 1916. Both dryland and irrigated rice production are practised. Irrigated production was instigated through government projects in the later 1960s and early 1970s. Output doubled during the 1980s, from around 18,000 tonnes in 1980 to 36,500 tonnes in 1989. This fell well short of expectations, however, as the government originally planned for Fiji to be self sufficient by 1975 (Chandra 1983:54).

Despite increased production in the 1980s, prospects are gloomy. Chandra's

assessment of the industry remains valid today:

... the future outlook for rice development in Fiji is extremely poor and it is anticipated that the present trend of increasing annual imports of rice will continue well into the next century (Chandra 1983:60).

References

- Allen, B. (undated). 'The north coast region', in D. Denoon and C. Snowden (eds), *A Time to Plant and a Time to Uproot*, Institute of Papua New Guinea Studies, Port Moresby.
- Chandra, S., 1983. *Agricultural Development in Fiji*, AUIDP, Canberra.
- Harris, G.T., 1984. 'Food imports and macro-economic policy in the South Pacific', *The Developing Economies*, 22(1):69-85.
- Jarrett, F.G., 1985. *Innovation in the Papua New Guinea Economy*, INA, Port Moresby.
- Shaw, B., 1985. *Agriculture in the Papua New Guinea Economy*, INA, Port Moresby.
- Solomon Islands, Statistics Office, 1983. *1983 Statistical Yearbook*, Government Printer, Honiara.
- Yen, D.E., 1980. 'Food crops', in R.G. Ward and A.S. Proctor (eds), *South Pacific Agriculture: Choices and Constraints*, ADB, Manila, Ch.9.

Kevin Parton is a senior lecturer in agricultural economics at the University of New England. Euan Fleming is a lecturer in agricultural economics at the University of New England.