Pacific
Policy
Paper 8

THE AUSTRALIAN NATIONAL UNIVERSITY
NATIONAL CENTRE FOR DEVELOPMENT STUDIES

Agricultural Export Marketing in the South Pacific

The future role of
marketing authorities

EDITORS

Euan Fleming and
Hugh Coulter

P a c i f i c

P o l i c y

P a p e r 8

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National Centre for Development Studies
Research School of Pacific Studies
The Australian National University 1992

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National Library of Australia
Cataloguing-in-publication entry

Agricultural export marketing in the South Pacific
Bibliography.
ISBN 0 7315 0960 9.

1. Marketing boards – Oceania.
2. Farm produce – Oceania– Marketing.
3. Produce trade – Oceania.
4. Privatization – Oceania.

I. Fleming, Euan. II. Coulter, Hugh. III. Australian National University. National Centre for Development Studies. (Series : Pacific Policy Papers; no. 8).

380.1410995

Series editor Maree Tait
Book design and layout by May Stinear

Printed in Australia by
Paragon Printers

National Centre for Development Studies
Research School of Pacific Studies
The Australian National University
GPO Box 4, Canberra ACT., 2601, Australia.

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GLOSSARY

ADB	Asian Development Bank	FOSFA	Federation of Oils, Seeds and Fats Associations Ltd
AFCC	Association française du commerce des cacaos	GNP	Gross National Product
AIDAB	Australian International Development Assistance Bureau	ICCO	International Cocoa Organization
ANGPCB	Australia New Guinea Production Control Board	ICO	International Coffee Organization
CAL	Cocoa Association of London	ILACO	International Land Development Consultants Ltd
CCIC	Cocoa/Coconut Industry Corporation (Papua New Guinea)	IMF	International Monetary Fund
CD	Construction Division (Tonga Commodities Board)	KTDA	Kenya Tea Development Authority
CDA	Coffee Development Agency	MAL	Ministry of Agriculture and Livestock
CEMA	Commodities Export Marketing Authority (Solomon Island)	MUV	Manufacturing Unit Value
CIB	Coffee Industry Board (Papua New Guinea)	NEC	National Executive Council (Papua New Guinea)
CIC	Coffee Industry Corporation (Papua New Guinea)	NGHCE	New Guinea Highlands Coffee Exports Ltd (Papua New Guinea)
CIL	Coffee International Ltd (Papua New Guinea)	NMA	National Marketing Authority (Fiji)
CISB	Copra Industry Stabilisation Board (Papua New Guinea)	NSPDC	North Solomons Plantation Development Corporation
CISS	Cocoa Industry Support Scheme (Papua New Guinea)	OPIC	Oil Palm Industry Corporation (Papua New Guinea)
CMA	Cocoa Merchants Association	PMD	Produce Marketing Division (of the Department of Agriculture, Forests and Fisheries, Western Samoa)
CMB	Copra Marketing Board (Papua New Guinea)	PNGCE	Papua New Guinea Coffee Exports Ltd
CPI	Consumer Price Index	PPD	Primary Produce Division (Tonga Commodities Board)
CQMS	Cocoa Quality Management System (Papua New Guinea)	PTC	Pacific Trading Company Pty Ltd (Papua New Guinea)
CRI	Coffee Research Institute (Papua New Guinea)	SIPL	Solomon Islands Plantations Limited
DAFF	Department of Agriculture, Forests and Fisheries (Western Samoa)	SPC	South Pacific Commission
DAL	Department of Agriculture and Livestock (Papua New Guinea)	Stabex	An EC export income stabilization scheme for agricultural exports
DCF	Desiccated Coconut Factory (Tonga Commodities Board)	TCB	Tonga Commodities Board
d.i.s.	Delivered in store	TCC	Tonga Construction Company
EC	European Community	TSP	Target Support Price (Papua New Guinea)
FAO	Food and Agriculture Organization of the United Nations	VCMB	Vanuatu Commodities Marketing Board
f.o.b.	Free on board	WSTEC	Western Samoa Trust Estates Corporation

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CHAPTER 1

The future role of marketing authorities in the South Pacific

Euan Fleming and Hugh Coulter

Part I — Background

Euan Fleming and Hugh Coulter

Recent trends towards the privatization of agricultural marketing in the developing world have led to a general re-evaluation of the appropriate role of government in the agricultural sector in the South Pacific. Antony and Fleming (Chapter 2) have summarized findings on the performance of marketing authorities in developing nations that have accumulated over the past thirty years.¹ The growing weight of evidence has convinced many South Pacific island policy makers that the rationale for the existence of these authorities is no longer valid.

This change in thinking at the national level has also been prompted by growing disillusionment in international aid agencies due to the poor track record of marketing authorities in developing countries. However, these agencies should not receive too much recognition for catalyzing a change in thinking. It has taken decades of careful research by independent analysts to convince aid agency decision makers that marketing authorities are not a panacea to agricultural marketing problems, that they have done little to lift the marketing constraints on agricultural development, and that agricultural marketing might be better undertaken by private marketers.

Until the mid-1980s, planners and policy makers in the South Pacific gave little attention to marketing constraints on agricultural development. Their preoccupation with production issues is reflected in the development plan

¹ This chapter also contains a summary of the history of marketing authorities in the South Pacific and a summary of economic trends in the agricultural export sector which provide a useful background to the issues discussed.

documents produced by virtually all governments in the region. Persistently poor agricultural export performance has forced these governments to revise their approach to agricultural development planning, to give more attention to marketing issues, and to appreciate the potential of private enterprise in agricultural markets to improve overall agricultural performance.

Recent events

Five recent events highlight the current upheaval in policy making on the role of marketing authorities in the South Pacific and deserve special mention: (i) the decision in Western Samoa in 1990 to disband the cocoa and copra boards; (ii) upheaval in the Commodities Board in Tonga over the past two years; (iii) the growing indebtedness of marketing authorities arising from the operation of stabilization schemes; (iv) the corporatization of institutions in the coffee industry in Papua New Guinea in 1991; and (v) the decision by the Government of Fiji in 1988 to cut off completely assistance to the National Marketing Authority and force it to operate like a private corporation, free from government restrictions.

Disbanding commodities boards in Western Samoa

The decision to disband the cocoa and copra boards in Western Samoa is noteworthy for three reasons. First, it demonstrates that the South Pacific has not been immune from the maladies that have been so thoroughly documented in marketing authorities elsewhere in the developing world. Poor marketing performance (see Chapters 3 and 13) forced the government to take action to improve the returns to cocoa and copra producers. Second, the decision by the government was hastened by the actions of the Asian Development Bank as part of a package aimed at rationalizing economic policy making, but it is likely that the government would have reached this decision without prompting by the Bank. Third, the initial measure chosen for deregulation was the complete disappearance of government involvement in marketing of these commodities.²

Rationalization of Tonga Commodities Board

Recent upheaval in the operations of the Tonga Commodities Board (TCB) reflect marketing difficulties similar to those experienced in Western Samoa. Of particular concern in Tonga, however, was the degree of interference in the management of the Board. Matters came to a head in 1989 when the Board faced serious liquidity problems and the present Managing Director was seconded from the Tonga Development Bank to resolve the Commodities Board's difficulties. His initial report presented a gloomy picture of the state of the

2 The government has since reversed this approach somewhat, as described by Toelupe and Coulter in Chapter 13.

Board's affairs (see Chapter 12), and he has since presented recommendations (now accepted) for a rationalization of the activities.

Growing indebtedness

The funds of stabilization schemes have been strained by prolonged low prices for major commodity exports from the South Pacific in recent years. Farm-gate prices, which are well above f.o.b. prices, continue to be paid to producers, against the better judgment of the managers of the marketing authorities. The outcome has been the exhaustion of virtually all stabilization funds in the region and in most cases, a large build-up of liability by the authorities to meet payout requirements. Two examples are cocoa and copra stabilization funds in Papua New Guinea.³ As of February 1991, the Cocoa Board of Papua New Guinea had borrowed K31 million to prop up producer prices. This represents about 80 per cent of one year's export value at 1989–90 export prices and volume, which, proportionally, is in the same range of borrowings as those undertaken by the Australian Wool Corporation prior to the abandonment of the Reserve Price Scheme in February 1991. The situation for copra is similar. Borrowings reached K17 million by February 1991, or 75 per cent of the value of projected 1991 exports of coconut oil and copra. It is difficult to see how these authorities can dissolve their increasing liabilities without an unexpected large increase in f.o.b. prices for cocoa and copra or a guarantee by the government that it will take responsibility for these liabilities. These occurrences are not limited to Papua New Guinea and demonstrate that the marketing authorities are not safe from political interference in their operations.

As a result of recent low commodity prices some marketing authorities have resorted to cost-of-production pricing policies (see, for example, Gimbol (Chapter 11, who reports this step by the Cocoa Board of Papua New Guinea in November 1989 favourably). This step should be viewed as dangerously regressive. While it is understandable that marketing authorities might want to enable producers at least to break even in times of low prices, there is a real risk that this short-run expedience will cause administered prices to lose touch with price trends in the world commodity markets, which will dictate producer prices in the long run.

The Coffee Industry Corporation in Papua New Guinea

The formation of a coffee industry corporation, comprising the Coffee Industry Board (CIB), the Coffee Research Institute (CRI) and the Coffee Development Agency (CDA), was first proposed in a coffee industry study by McGowan International (1989). The aim was to make the new organization accountable to producers, because none of the existing commodity organizations, including government services, had been able to provide sufficient types of quality services.

3 Details of recent experiences in cocoa stabilization are recounted by Gimbol in Chapter 11.

The government welcomed the proposal because it resolved political issues surrounding the CDA and allowed the government to stop funding the coffee industry. Growers were also enthusiastic because they would be able to re-assert themselves in the main industry decision-making body. The highland provincial governments were the main opponents of the proposal, primarily because they thought they would have less control and thought it was a step backwards for the industry.

Encouragement for the formation of a coffee industry corporation came in 1989 from the Asian Development Bank (ADB) which required the formation of independent commodities organizations with majority industry representation as condition of a US\$100 million Agricultural Program Loan.

In August 1991 the Coffee Industry Corporation (CIC) Draft Bill was passed in Parliament. The Memorandum and Articles of Association establish the CIC as a company limited by guarantee. The membership is representative of smallholders, exporters, the estate sector, processors and three government agencies. The objectives of the CIC include:

- research, extension, promotion, marketing, administration and control of the coffee industry;
- development of husbandry techniques;
- collection of statistics;
- promotion of coffee consumption and of downstream coffee processing.

The CIC is empowered to:

- require growers to provide information on trees, production, sales and stocks;
- set quality standards;
- impose minimum and maximum prices;
- register buyers, processors and exporters;
- stabilize prices, and collect levies for research, extension and market regulation.

All assets (and liabilities) of the existing coffee institutions will be expropriated to the CIC to provide initial funding. In the future it will be funded by the industry through export levies and licence fees. A government grant varying with coffee prices is under consideration.

Other industry corporations in Papua New Guinea. In 1991 the government budgeted assistance to the industry corporations to finance the early stages of research and development (Papua New Guinea 1991).

The ADB Program Loan policy matrix requires industry corporations to be formed for all major export commodities. The formation of a rubber industry corporation is under discussion, and working groups are preparing for the establishment of an Oil Palm Industry Corporation (OPIC) and a Cocoa/Coconut Industry Corporation (CCIC).

Greater autonomy in Fiji

While Fiji is not one of the nations studied in this book, the experiences of the National Marketing Authority (NMA) are of sufficient interest and difference from those of other marketing authorities to be worthy of mention. From its inception in 1971, the National Marketing Authority was plagued by conflicting objectives, inefficiencies in its operations and a heavy reliance on recurrent funds from the government. This reliance was cut off completely in 1988, and the NMA was forced to rely on profits and borrowings to finance its activities. At the same time, the manager was given a free hand to operate the authority as a commercial concern. This led to joint ventures in the private sector. A characteristic of the NMA shared by few other marketing authorities in the South Pacific is its involvement in domestic and export marketing of a wide range of processed and semi-processed agricultural commodities. Whether NMA prospers in the future remains to be seen. It has demonstrated, however, that an agricultural marketing organization can operate without government involvement in its activities, in competition with other private marketers and without reliance on government financing.

Framework for policy analysis

There seems to be a consensus on some issues and on some dimensions of the role of South Pacific governments in agricultural markets. For example, marketing authorities in other developing nations have had substantial roles in domestic food marketing, frequently with disastrous effects (Chapter 2). This poor record appears enough to convince many policymakers that it is not a desirable role for marketing authorities in the South Pacific.

Differences of opinion on the extent to which South Pacific governments should intervene in agricultural markets reflect two basic approaches: 'interventionist' (governments have a strong role to play in the market-place) and 'minimalist' (governments have only a minimal role to play in the market-place).⁴ While this is a rather crude dichotomy, it is useful in distinguishing different views held by influential people in the region, and by the authors of the chapters in this book, about the nature of any future role for agricultural marketing authorities.

The two approaches reflect the level of optimism about the motives and capabilities of private operators, on one hand, and governments on the other. The stance of the minimalists is essentially an optimistic one: the motives and actions of private marketers will be sufficiently convergent with national development interests to justify a predominant marketing role; existing

⁴ The term 'interventionist' is used with some reluctance because, in the context of agricultural marketing, government intervention is a term that is often used pejoratively. It is not meant to be used in a disparaging way in this chapter but, rather, to identify those who advocate a powerful and active role in agricultural markets for governments.

commercial laws and conventions are sufficient to ensure this convergence of motives; and marketing systems are sufficiently advanced to ensure private marketers are capable of efficient marketing operations.

The viewpoint of the interventionists is that private marketers unlike government cannot be entrusted to act in the long-term national development interests. Reliance on the enforcement of commercial law and adherence to certain conventions by private marketers is not sufficiently guaranteed and marketing systems are not sufficiently developed to enable efficient private marketing operations.

This chapter summarizes, discusses and evaluates the arguments for and against marketing authorities in the South Pacific which are presented in this book. The policy suggestions discussed by Fleming in Part II of this chapter attempt to represent the diversity of views expressed, but in general the minimalist line is followed. Coulter in Part III of this chapter and in Chapter 13 presents the interventionist viewpoint.

Criteria

The justification of government activity in agricultural markets through marketing authorities rests on five criteria:

Reduction in marketing margins	Governments have a role to play in agricultural export marketing in the South Pacific if they can operate with lower marketing margins than those which would prevail with private marketing operations for given marketing technologies and firm size (see below for variations on these two conditions).
Stabilization	The case for government activity through marketing authorities to undertake stabilization measures rests on the existence of deleterious effects of price instability on economic development at the macro, regional and microeconomic levels.
Regulation	Where private marketers operate in an agricultural marketing system, a role exists for government if the decisions and actions of these marketers have adverse effects on agricultural and general economic development.
Facilitation	Some marketing activities which are beneficial to the marketing system, the agricultural sector and economic development in general, may not be financially attractive to private marketers. Marketing authorities can be used by governments to intervene to ensure that these activities are undertaken, and so facilitate export marketing.
Economies of size	There is potential in agricultural commodity exporting to exploit any economies of size in marketing as may exist, or to minimize the dis-economies of small size. One way of achieving this is to give monopoly powers to marketing authorities.

The general rule in undertaking assessments of the role of marketing authorities is to compare the institutional failure with market failure in agricultural export marketing. Is the institutional failure that accompanies the discharge of the above functions by marketing authorities greater or less than the market failure that would occur if marketing authorities were not to undertake these particular functions? The standpoint of the interventionists and minimalists affects the mode of assessment. Interventionists argue that it is up to the minimalists to show that the marketing system would perform better if marketing authorities were to withdraw from a particular marketing function. Conversely, minimalists argue that it is incumbent upon the interventionists to prove that government activity through marketing authorities is beneficial to the operations of the marketing system.

Measuring the performance of marketing authorities in the South Pacific

It is difficult to assess the performance of agricultural export marketing sectors in the South Pacific. There are four principal reasons why this has been so:

- Methodological difficulties.
- Data deficiency.
- The nature of agricultural marketing.
- The absence of competing private marketers and marketing authorities in the same marketing stage.

Methodological difficulties Methodological difficulties in measuring agricultural marketing performance have been outlined by, among others, Harriss (1979) and Helmberger, Campbell and Dobson (1981). The two major difficulties are establishing norms against which to measure performance and accounting for the multi-dimensional nature of agricultural performance.

Efficiency is but one (albeit important) dimension of overall marketing performance. In measuring efficiency, Harriss (1979) has pointed out that it is not enough simply to show that a market is competitive or integrated to conclude that it is also efficient. It is nevertheless possible to define marketing efficiency in terms of allocative and technical efficiency (Kilmer and Armbruster 1984).

As an example of the multidimensional nature of agricultural marketing performance, consider the quality of marketing services. Quality of services covers the standard of the service offered (e.g. accurate grading), reliability, timeliness of operations, and protection of the commodities being marketed from deterioration. These are difficult to identify and quantify in South Pacific rural marketing systems.

Data deficiency Data availability also proved a major stumbling block to measuring performance. It was not possible to measure the economic efficiency of any marketing operations because of lack of data on volumes of services offered and resources used. Even undertaking simple analyses, such as comparing marketing margins, proved difficult. Often, the length of the data series available was too short to get meaningful estimates, while in other cases the quality of data was problematic, with different sources sometimes providing wildly different figures for the same estimate. In some countries, it is difficult to isolate price stabilization activities from normal pricing of marketing services.

The nature of agricultural marketing The nature of marketing systems makes comparing the performances of different organizations particularly difficult. Marketing systems typically contain a number of stages, and organizations differ in the extent of their involvement in these stages. Furthermore, the volume and quality of ancillary services available to different marketing organizations vary. Firms operating in remote areas with only the most rudimentary infrastructure and institutional support are unlikely to appear as efficient as firms operating in a highly developed marketing system, no matter how efficient they are as individual organizations. These factors make the comparison of 'like with like' very difficult.

Absence of private/public competition A major reason for measuring agricultural marketing performance in this study was to compare private marketing firms with government marketing authorities. This proved to be particularly difficult in the South Pacific because there are so few situations in which the two types of organizations compete against each other. By their nature, marketing authorities, being monopolists in exporting particular agricultural commodities in a nation, do not compete with private trading firms. Only one comparison of any note could be made, between private traders of copra in Vanuatu prior to 1982 and the Vanuatu Commodities Marketing Board (VCMB) after 1982.

Two observations can be made on the above points. First, more research is needed before any definitive statement can be made about the comparative performance of private marketers and marketing authorities in the agricultural export sectors of the South Pacific. Second, the tentative findings on performance reported below have necessarily been made using simple performance measures, complemented by value judgments, which may be faulty. These judgments are based on the general observations of various people with good knowledge about the ways in which marketing firms have been operating in the agricultural export sectors of the South Pacific.

Part II — Assessment

Euan Fleming

Reduction of marketing margins

The rationale for government activity through marketing authorities rests on the government's interest in protecting small farmers and helping them to develop. This role has been made explicit in the objectives of a number of marketing authorities. Marketing authorities can fulfil this function either by operating at a level of efficiency higher than would be achieved by private marketers or taking lower levels of profit than private marketers. The implied assumption in the latter case is that private marketers would make 'excessive profits'.

There may be some justification for the fear of excessive profits on the basis of past experience in the South Pacific, particularly in the copra industry. It is claimed that the big colonial trading companies of the South Pacific paid unduly low prices to small copra producers which enabled them to make excessive profits. Jackman's (1988) account supports this view of the history of the copra industry in Papua New Guinea. These circumstances, it is argued, justify the establishment of statutory marketing authorities to counter the behaviour of traders who dominated the copra marketing systems.

Two doubts exist over the relevance of history to the issue of prices paid to smallholders by private marketers today. First, the claims are not substantiated by independent studies. Even Jackman relies mainly on the statements and stances of people who could hardly be described as disinterested observers. This is not to say that there is no substance to these claims, but those making them need to come up with more convincing evidence than is currently available. Unfortunately, the agricultural marketing systems in developing nations are replete with claims of unfair trading practices and, especially, excessive margins which on closer inspection are not justified.

Second, the marketing environment has changed radically, not least because all South Pacific island nations are now independent. The scope for dealing with unfair private trading practices should be correspondingly greater.

A lower level of marketing costs for marketing authorities relative to private marketers would be one criterion that could be used to defend the role of marketing authorities in export marketing. Putting aside for the moment the possibility of reduced costs through economies of size, what theoretical support is there for expecting marketing authorities to operate with lower costs than private marketers?

At marketing stages close to small producers, it is more likely that private marketers will be more efficient at collecting, storing, carrying out simple processing on, and distributing small surpluses from numerous small producers, because of their greater flexibility and adaptability. Yet this is hardly an issue in the export marketing sectors in the South Pacific because governments normally allow private marketers virtually an unfettered role in these stages.

Marketing authorities have assumed the trading role historically undertaken by the large private trading corporations mentioned above, at stages closer to the point of export. Private exporters are now excluded from this role in the copra industries. Herein lies the difficulty in confirming or rejecting the notion that marketing authorities have lower margins than private marketers. Such a proposition could be tested using empirical evidence but with no direct competition between marketing authorities and private marketers, this evidence is unavailable.

Empirical evidence

Three means of testing empirical evidence have been used in this book (see Chapters 3, 8, 9 and 10 by Fleming and Antony, Smith, Ivarami and Yarbrow, and Bae and Coulter, respectively):

- the empirical evidence on margins for agricultural marketing activities elsewhere in the developing world;
- a comparative analysis of margins among agricultural export industries and nations in the South Pacific; and
- a subjective assessment of the size of margins in each particular export industry, given knowledge of the marketing functions undertaken.

Evidence elsewhere in the developing world

Substantial evidence has accumulated on marketing margins of marketing authorities relative to private marketers in other developing nations. This evidence overwhelmingly indicates that private marketers have lower margins than marketing authorities, providing certain conditions hold (Chapter 3 by Fleming and Antony). There is *prima facie* evidence, therefore, that producer prices are likely to be higher in a marketing system in which private marketers operate.

Two important qualifications need to be made to this finding. The first concerns certain conditions that must hold. In poorly developed marketing systems where opportunities for exploitation are rife, it has been found in some cases that private marketers do indeed exploit small farmers by taking excessive margins.

Second, as pointed out in Chapter 2, one of the major factors leading to high margins for marketing authorities in other developing countries has been the pursuit of a hidden agenda. The two most important hidden agenda items in these nations

have been the transfers of producers' surplus to the state and to urban consumers. This does not, however, seem to be the case in the South Pacific. On the contrary, their decisions are often greatly influenced by political interests connected to the agricultural export production sector.

What are the implications of these two qualifications? The first qualification indicates a need for improvements in the marketing systems and regulation to ensure that such exploitative behaviour does not occur. It is a matter taken up in detail below. The second qualification is simply a defence for marketing authorities not having higher margins than private marketers; it does not corroborate a case for lower margins.

**Evidence in
South Pacific
countries**

Margins of private traders in the cocoa and coffee export industries can be compared with those of marketing authorities in the cocoa and copra export industries in the South Pacific. There are obvious dangers in making inferences from these comparisons, described in Chapter 3. Two of the more important difficulties are in comparing dissimilar marketing functions, and comparing marketing functions in different nations which might have quite different marketing environments. Keeping in mind these difficulties, what findings can be drawn from the evidence? In general, there is no evidence that private exporters have margins higher than those of marketing authorities. For example, while Bae and Coulter (Chapter 10) can justifiably claim that the Copra Marketing Board in Papua New Guinea operates with a good deal of financial efficiency, they cannot demonstrate that private traders would operate with higher marketing costs. Nor is their comparison of copra margins with those of cocoa and coffee (which favour copra) valid given the different types of marketing activities and product characteristics of the three commodities.

A comparison of copra marketing margins in Vanuatu before and after the replacement of private marketing with marketing by the VCMB shows, on average, no reduction. After making allowances for the differences in export marketing functions involved in the different industries, private marketers in the cocoa and coffee industries appear to be at least as effective in keeping margins down as marketing authorities in the cocoa and copra export industries. A comparison of cocoa margins of private traders in Papua New Guinea with those of other cocoa exporting nations shows the Papua New Guinea exporters in particularly good light.

The overwhelming feature of the evidence assembled on marketing margins is the great discrepancies in margins among marketing authorities that occur for ostensibly similar

**Subjective
assessment of
margins**

marketing functions. Margins for copra export marketing in Papua New Guinea and Solomon Islands are vastly lower than those for other copra marketing boards. Cocoa marketing margins in Western Samoa are much higher than those for private exporters of cocoa in Papua New Guinea and, to a lesser extent, Solomon Islands. In conclusion, there is clearly no case for believing that marketing authorities will, as a matter of course, minimize the costs of commodity export marketing in the South Pacific.

The great differences in margins among marketing organizations doing essentially the same tasks raises the obvious question of why this might be so. In the case of copra exporting in Papua New Guinea and Solomon Islands, the performance of the two boards with respect to margins must be considered satisfactory. It is doubtful whether export margins in these two countries would be reduced by reverting to private marketing. At the other extreme, it is highly likely that the excessive margins of marketing authorities in Tonga and Western Samoa would be much lower with private trading. Vanuatu and Kiribati margins lie between these extremes. Both appear to be higher than is justified, although there might be extenuating circumstances in Kiribati.

As indicated above, private cocoa export margins in Papua New Guinea appear to be at quite justifiable levels. The prevailing view, that exporters in general compete strongly and are quite efficient, seems to hold true. The opposite is true of the cocoa export margins, which are unjustifiably high, of the Cocoa Board in Western Samoa.

The margins of Solomon Islands private cocoa exporters, while much lower than those of the Cocoa Board in Western Samoa, are unduly high. In supporting the case for private export of cocoa in Solomon Islands, it would be necessary to find out why this is so. The three most plausible explanations are exploitation, market under-development and diseconomies of size. First, exporters may be able to charge high margins because of a lack of competition, enabling them to exploit those further back along the marketing chain, notably roadside buyers and producers. Second, the cocoa industry in Solomon Islands is relatively new, and it could be argued that the marketing system is still at an early stage of development with various market imperfections still being ironed out. If so, it is expected that margins would have been declining in recent years, and will decrease markedly in the future. Empirical evidence does tend to support these contentions. Real margins have certainly declined substantially since the mid-1970s, and a noticeable decline occurred over the period 1986-88, the

latest period for which figures are available. Third, the marketing industry may suffer from diseconomies of small size. Certainly, the average volumes handled by cocoa traders are small. Again, as the industry grows, these diseconomies would be expected to decline.

Conclusions

Nothing clear-cut can be gleaned from the empirical evidence on the size of marketing margins of marketing authorities relative to private marketers in the South Pacific. It is possible to have both marketing authorities and private marketers operating in such a way as to take reasonable margins for the services they perform. Fears of the exploitative nature of private marketers appear to be unjustified. There is some evidence to support claims of inefficiency and poor management in some marketing authorities; however, this evidence can be countered by those that are well-run.

What can be concluded from this mixed set of findings depends on the perspective taken. One view is that if marketing authorities can be shown to be operating with reasonable margins, there are no grounds for replacing them with a private marketing system. The alternative view, and the one ascribed to here, is that it is incumbent upon proponents of marketing authorities to show that they will have lower margins than private marketers. In other words, the presence of marketing authorities implies government activity in the market-place, and that activity has resource costs. No government activity is to be preferred to some government activity, if the margins are similar in both circumstances (other things being equal).

Apart from the fact that there is no general evidence of private margins being higher than marketing authority margins, there is another reason for preferring a private marketing system on the grounds of size of marketing margins. Historically, good performance by marketing authorities in the South Pacific has depended on the personal qualities of their management staff and the degree of autonomy managers have in making commercial decisions. Even if these conditions have prevailed in the past, as indeed appears to be the case in the Copra Marketing Board in Papua New Guinea and Copra Export Marketing Authority (CEMA) in Solomon Islands, for example, there is no guarantee that this situation will prevail in the future. Private marketing systems, on the other hand, have greater robustness in adapting to a changed marketing environment. It is not a good management principle to rely on particular personalities to ensure good organizational performance.

To sum up, using marketing margins as the criterion there are grounds for preferring a private marketing system to a monopolistic market authority in commodity export marketing. This does not deny a continuing participatory role for those marketing authorities that have demonstrated that they can operate with reasonable margins, and the appropriate nature of their role is described below. Two aspects of efficiency, however, have not been examined in this section, and are included in later sections: technological efficiency and size efficiency.

Stabilization

Chapter 14 by Ilala and Chapter 6 by Fleming contain the main arguments for and against stabilization, respectively, as a legitimate function for marketing authorities in the South Pacific. Their arguments are summarized below, and a judgement is made as to whether there is a case for marketing authorities continuing to play a stabilization role in South Pacific agricultural marketing systems.

Gimbol (Chapter 11) also argues in favour of price stabilization and his approach is one that is fairly common among agricultural administrators in the South Pacific. The idea that stabilization might not yield any net benefits, or might have net costs, is not even broached.

The case for stabilization is debated at three levels: the general economy, the regional economy and the farm level. Both efficiency and equity arguments have been put forward to support the case for stabilization.

Macroeconomic stabilization

The case for macroeconomic stabilization has four main parts:

- The degree of macroeconomic instability caused by instability in commodity export markets is inimical to economic development.
- Agricultural industries for which stabilization schemes exist are sufficiently important for their instability to have a major impact on the stability of the whole economy.
- Strong linkages exist between these industries and the monetary economy.
- Price stabilization in these industries is largely translated into revenue stabilization.

Proponents of stabilization argue that Pacific island countries are open economies, depending heavily on imports and foreign capital, with large primary sectors which export to unstable world markets; and the public provision of goods and services accounts for a large share of domestic output. Macroeconomic performance of these countries is therefore greatly influenced by what happens in their external sector.

Hence, the success of macroeconomic policies depends on policy frameworks to withstand disturbances transmitted through the balance of payments. Pacific island nations are particularly vulnerable in that the causes of instability are largely beyond the control of domestic policy instruments. Fiscal policy is seen as inadequate to deal with imported instability because its scope is limited by import leakages and the high proportion of foreign exchange in the reserve assets of the banking system. If domestic stabilization is to be effective, it must operate directly on the incomes immediately affected by the export instability.

A key issue in assessing the validity of the case for macroeconomic stabilization is the effectiveness of commodity stabilization schemes in bringing about macroeconomic stability. It depends in the first place on the relative

contributions of exports of these commodities to the balance of payments. It is shown in Chapter 2 that they are not very high and are probably becoming smaller over time.

Fleming (Chapter 6) argues that three other factors further reduce the effectiveness of stabilization schemes. First, at best these schemes attempt to remove only some of the variation in revenue brought about by price fluctuations. Second, the scheme managers are not omniscient and operate, like the producers, in an uncertain environment. Market uncertainties lead to conservative price setting rules in the schemes and if scheme managers misjudge price trends schemes can run out of funds in periods of extended low commodity prices. This has recently happened in virtually all Pacific island countries and in the Australian wool industry. It is a situation likely to be more destabilizing to a South Pacific island economy than the price fluctuations themselves. Third, the occurrence of negative revenue covariances between commodity exports means that stabilization of export revenue from one commodity could destabilize overall export revenue. Also, price stabilization does not automatically translate perfectly into revenue stabilization, which means that some price effects are likely to be partly, even wholly, offset by demand-supply interaction effects. As pointed out above, it is difficult for operators of stabilization schemes to know in advance how the relative contributions of revenue covariances and supply, demand and demand-supply interaction effects will change.

There are viable alternative means of achieving macroeconomic stabilization if it is considered necessary to economic growth. Three (not mutually exclusive) such alternatives are government fiscal policy, government monetary policy, and reliance on international stabilization assistance.

The main argument against using fiscal policy is that it could give rise to substantial problems in budgetary management. The argument seems to be that budgetary matters are far too important to be left to government! If this is indeed so, stabilization schemes merely serve to distract attention from much more urgently needed corrective action directed towards budgetary management. Further, recent evidence in some South Pacific countries indicates that political interference is likely to be present just as much in the operation of stabilization schemes as in the administration of fiscal policy.

It has been shown that agricultural commodity stabilization schemes have made little difference to broad money supply in Papua New Guinea (Jarrett and Anderson 1989). The situation in other Pacific island countries has almost certainly been similar. A sound monetary policy, with appropriate sterilization of funds in times of high commodity prices and drawing upon reserves in times of low prices, is a 'first-best' solution. It is preferable to commodity stabilization schemes in dealing with changes in money demand, provided the changes are within reasonable bounds. Admittedly there are limits to the effectiveness of monetary policy in small nations given the chronic use of financial assets for transactions rather than investment. Therefore, use of monetary policy as a

stabilization measure needs to be accompanied by financial reform which encourages greater domestic saving and investment in times of high commodity prices. As with fiscal policy, if governments do not adopt sound monetary policies, stabilization schemes may camouflage the need for fundamental policy reform, and delay its implementation.

The third alternative is international stabilization assistance. The International Monetary Fund Compensatory Financing Facility and the European Community (EC) Stabex scheme provide governments with a sound way of handling temporary revenue instability. Stabex funds have been criticized for being too tardy in their delivery to be useful for revenue stabilization, and for exacerbating cyclical fluctuations. But this can also occur with commodity stabilization schemes. Who is to blame for the tardy delivery of Stabex funds is difficult to ascertain. Governments blame the slowness of the EC in processing applications and making grants, while EC officials blame the delayed submissions by Pacific island governments.

Regional economic stabilization

Agricultural export activities are usually more important as cash sources in the regional economy than in the general economy. What are the implications of commodity export price stabilization in the rural regional economy? At issue is the extent to which regional-level activities rely on agricultural export earnings.

In general, arguments for regional economic stabilization rely on similar presumptions to those mentioned above in the discussion of macroeconomic stabilization issues. Chief among these are that price stabilization can be closely translated into revenue stabilization, and that export earnings from stabilized agricultural commodities form a major part of the inflow of cash into the regional economy.

Three important areas potentially affected by instability are regional government activities and programs, the economic activities of regionally-based industries and the provision of infrastructure in regional economies. The implications of agricultural stabilization for funding regional programs are most likely slight throughout the South Pacific. The chief source of funds for regional governments is usually the national government. Few if any regional institutions have the power and capability to raise the bulk of their revenue through their own forms of taxation.

Instability in export earnings is potentially damaging to regionally-based industries that have close relations with the agricultural export sector. This instability can be transferred to industries through forward and backward linkages. Transfer through forward linkages occurs when the marketing and processing of agricultural products is destabilized through agricultural instability. However, it is volume instability which causes concern in this case. Because the stabilization schemes in the South Pacific operate on price and not volume, there is no guarantee that they will reduce instability in throughput, and they may make it greater. Transfer through backward linkages occurs when

agricultural export instability depresses and makes unstable the demand for goods and services by farmers from regional industries. However, inter-industry linkages in rural regional economies in the South Pacific are quite weak, and most goods and services are supplied to producers by industries outside the region. These weak linkages reduce the impact of agricultural export instability on regional industries.

The impact of instability on the supply of services which are intensive users of infrastructural facilities in rural regional economies is of real concern. It has two implications. First, it can lead to wide fluctuations in use made of these facilities over time, requiring larger investments than would occur with smooth flows of commodities in order to prevent bottle-necks in busy marketing periods. But once again, this is a problem of volume instability which is unlikely to be solved by price stabilization. A second and related point is that periods of low prices can disrupt the provision of services such as coastal and inter-island shipping which rely on backloads of commodities such as copra from remote locations. But the damaging factor here is periods of low prices and not instability in itself. They are two different situations which require different actions. One of the problems of extended periods of low prices, as governments have recently found out, is that stabilization schemes might need to be bailed out. The best solution to extended periods of low prices may be short-term government subsidies or 'pot-holing' of producer prices rather than stabilization.

Microeconomic stabilization

Four major arguments justify commodity export stabilization at the farm level. They are the alleged negative impacts of export price instability on:

- the welfare of small producers of agricultural export commodities, including income distribution among them;
- savings capacity of smallholder exporters;
- investment and maintenance decisions of producers of export commodities; and
- resource allocation within the agricultural sector and between agriculture and other economic sectors.

The producer welfare argument for stabilization is that most farmers in the South Pacific operate on a small scale and are from poor households. Commodity export price fluctuations will often cause fluctuations in real incomes that are detrimental to the economic and social welfare of the household.

The argument that commodity price stabilization schemes increase producer welfare is open to dispute. First, the impact on the welfare of most farm households is not great, and there are significant costs to producers associated with stabilization. It has been shown by a proponent of stabilization (Ilala, Figure 14.1) that the level of price stabilization in Solomon Islands has been much less than desired. In order to achieve the desired level, the scheme

managers have to depart markedly from market trends at times and risk losing touch with what future price trends might be.

Also, the extent to which incomes are stabilized will vary widely among producers. Those most likely to depend heavily on commodity export receipts are also likely to be the most wealthy, and best able to withstand revenue fluctuations. Smaller, potentially more vulnerable producers more likely rely on a diverse set of income-earning sources, and are therefore generally less affected by instability.

The contention that stabilization schemes are the best way to raise producer welfare by reducing risk implies that those responsible for operating stabilization schemes know better than the individual farm households how to manage risk. This proposition is debatable. Most smallholder households in the South Pacific which produce for export markets appear to have a well-articulated set of strategies to minimize their exposure to market risk. There is no evidence that the state has a better understanding of smallholders' risk attitudes, and what a smallholder regards as an 'acceptable' level of variability in commodity prices, than the smallholders themselves.

Another issue that casts doubts on raising producer welfare from export price stabilization is the potential anomaly of a group of producers, whose marketed surplus is negatively correlated with industry-level marketed surplus in the short run, getting payments from the stabilization fund in 'large surplus' years while paying levies in 'small surplus' years. Hence, stabilization could have a destabilizing impact on the incomes of this group.

This example is an aspect of a more general concern about temporal inequity. Deterioration in producer welfare could be brought about because contributions by individual producers to stabilization funds are unlikely to match their receipts. This could be of particular concern if it meant that smallholders received less relative to what they are levied while largeholders received relatively more. Price stabilization will cause a reduction in producers' net income if, as is almost universally true among stabilized commodities in the Pacific islands, the price elasticities of supply are greater than zero. It is almost certain that producers' incomes in the South Pacific have been lowered by stabilization as a result of the accumulation of stabilization funds.

Finally, there is an underlying assumption made by proponents of stabilization schemes that private export marketers would not stabilize prices paid to producers. That is, they would not take relatively lower margins when world commodity prices are low and relatively higher margins when prices are high which the evidence presented in Chapter 3 supports. Also, the effectiveness of the Vanuatu Commodities Marketing Board in reducing the variability in c.i.f. prices to producers in Vanuatu has been shown to be little different from that of the private traders.

There is a lack of evidence on the relationship between export revenue instability and savings in the South Pacific. However, it is just as likely, if not

more, that savings of agricultural producers are potentially greater with higher levels of instability.

Proponents of stabilization point to instances where stabilization funds have been successful in obtaining rates of interest on producers' monies that are higher than could have been obtained by individual producers. But this situation highlights two important issues that have nothing to do with the marketing of export commodities or stabilization. The first is the lamentable state of affairs in rural financial markets and second, the lack of savings facilities in most Pacific island countries. If the government needs to provide better savings facilities for rural people, it should be doing this through proper savings institutions and not through a marketing institution. It is vital that the problem of lack of savings facilities in rural areas is tackled directly, because to do it indirectly will not remove the root causes of the problem.

As with the relationship between export revenue variability and saving, evidence is lacking on the relationship between price variability and producer investment in the South Pacific. If the potential for saving is higher in times of greater instability, then it follows that the potential for investment is similarly higher. The forced saving caused by agricultural stabilization is likely to have reduced private investment in agriculture.

The impact of commodity price instability on export crop producers' decisions on maintenance is problematic. Possibly, maintenance is neglected during extended periods of low prices. However, it should be stressed that these circumstances, as mentioned above, are not the same as unstable prices. Some means of 'pot-holing' or subsidization by governments is likely to be a more effective means of keeping producers in plantations and carrying out maintenance during these periods.

A major justification of stabilization schemes is that they reduce the distortions of price instability and enable producers to make better resource allocation decisions based on long-term price trends. This is a reasonable argument if it can be shown that greater price instability causes less than optimal resource allocation.

The evidence is sparse, but what is available does not appear to justify stabilization. First, it has been argued that there is no reliable evidence that investment levels are being suppressed by the degree of instability in commodity prices. Furthermore, the major investment that producers are likely to make in the tree crops for which stabilization schemes exist is in replanting or new planting. Planting decisions have been influenced more by government programs and subsidies than by commodity price movements. There is no evidence to support the propositions that price instability distorts supply response decisions.

Stabilization schemes can cause intersectoral resource use distortions. During a period of prolonged low prices, producers of export commodities with stabilization schemes have less incentive to divert resources to other, now more socially profitable activities than producers in other countries. Yet, observing low prices in international markets, they would also be less inclined to invest to improve long-term productivity.

Stabilization is itself a costly exercise in resource use. Scarce financial resources are tied up in the stabilization funds. Skilled and experienced

government personnel, who have a very high opportunity cost given the shortage of such people in Pacific island administrations generally, are required to operate the stabilization schemes.

Conclusions

The above summary shows that it is not obvious that commodity price stabilization schemes in the agricultural export sectors of the South Pacific produce net benefits. While it is conceded that not all issues reviewed are clear-cut in not favouring stabilization schemes, the weight of evidence and theory suggest that the arguments against stabilization predominate.

There is a need for more evidence, particularly on the impact of instability on individual producers supplying the export market. Hopefully, a clearer picture of the worth of stabilization schemes will emerge when this evidence is forthcoming. At present, the conclusion regarding stabilization is similar to that of marketing margins above: it should be incumbent on proponents of stabilization to demonstrate its worth, moreso than on others to demonstrate that it is not worthwhile.

Unless more evidence is forthcoming, the case for the continued presence of marketing authorities in marketing systems because they are required to operate stabilization schemes rests on mere contention, and is tenuous. Proponents of a role for marketing authorities in compulsory stabilization of certain commodity export prices have probably greatly under-estimated the capacity of farm households to undertake their own risk-minimizing strategies, and have over-estimated the current relative importance to the general economy of the stabilized commodities and the ability of administrators to forecast future commodity prices more accurately than producers.

Ilala (Chapter 14) places much faith in the 'pragmatic policy approach', as opposed to theory, to support the case for stabilization. Pragmatism is defined in *Webster's Dictionary* as 'the doctrine that truth ... is determined by results ...'. It is ironic, then, that no evidence of the results of stabilization on South Pacific economies and agricultural households is presented.

Regulatory functions

The concept of market regulation can have different connotations. A narrow definition encompasses only those actions to control marketing activities that are enshrined in law. A broader definition is preferred in this study. To regulate, according to the *Webster's Dictionary*, is 'to adjust in accordance with rule, order or established custom; ... to subject to governing principles or laws'. The implication of this definition is that regulation goes beyond legislation to include all means of influencing behaviour and activities in accordance with a given set of norms.

Alternative strategies for market regulation

Government activity to regulate agricultural markets can cover a broad spectrum. For simplicity, five alternative models can be delineated. In ascending degree of government involvement, these are:

1. Adherence to basic commercial laws only.
2. Basic laws plus specific legislation to cover the particular circumstances of an export industry.
3. As in 2 plus licensing by inducement.
4. As in 2 plus licensing by compulsion and accompanying punitive power of delicensing to force market participants to behave in a manner regulators determine to be appropriate.
5. As in 4 but with a pre-determined limit on the number of licences.

These models represent descending degrees of optimism about the way marketers behave and, conversely, increasing levels of optimism about the ability and willingness of public institutions to coerce people to behave in a certain way. They therefore imply quite different assumptions about the attributes of private marketers and governments. The interventionists characterized earlier in this chapter typically fit into models 4 and 5. Minimalists, on the other hand, fit most comfortably into models 1 and 2, and possibly 3 under certain circumstances.

These different assumptions are summarized in Figure 1.1.

Figure 1.1 Interventionist and minimalist assumptions about market behaviour

Interventionist	Minimalist
Private marketers have short time horizons and concentrate solely on short-term goals	Private marketers have long time horizons and attempt to build up a regular clientele
Private marketers take every opportunity to exploit smallholder producers	Private marketers only exploit producers if producers lack necessary market information
Private marketers will act fraudulently, with little regard for existing laws	Private marketers respect the existing laws to the same extent as other business firms
Private marketers lack enterprise to expand their marketing functions	Private marketers expand their marketing functions if the incentives are right
Private marketers do not adhere to strict quality control and grading procedures	Private marketers undertake adequate quality control and grading procedures if the incentives are right

First, interventionists have little faith that marketers take a sufficiently long-term view of their place in the marketing system. Government regulators must therefore allow to trade only those private marketers whom they judge to have a long-term commitment to the industry. A restrictive licensing system is therefore set in place, with authority vested in the regulators not to give a licence to any marketer not considered to be capable of taking an appropriately long-term view of their involvement in a particular market. In the case of those already holding a licence and judged not to be taking an appropriately long-term view of their marketing position, regulators can revoke their licences. Minimalists, on the other hand, assume that all potential private marketers will act in their own long-term interest, which is presumably to try to operate a financially viable enterprise in the long term. Entry into the industry should therefore be open to anyone who wishes to trade.

Second, interventionists hold the assumption that private marketers will exploit smallholder producers of a commodity as a matter of course. Regulators should therefore act as protectors of these producers. This means they must have at their disposal punitive measures to control marketing behaviour. These measures should enable them to remove the licence of any marketer behaving in a manner they judge to be inimical to the interests of producers, and restrict licences to a small number of marketers whose activities they are able to monitor closely. The logic of minimalists is opposite to this. Producers with a set of information at their disposal similar to that available to marketers should be able to fend for themselves without the specific protection of regulators. The role of regulators is therefore to ensure the widespread dissemination of market knowledge, without the need to restrict or control market behaviour.

Third, according to interventionists, marketers are presumed to be in a position to circumvent existing laws. The rationale for this presumption is that agricultural markets in the Pacific islands are underdeveloped compared with other sectors of the economy. Illegal activities of marketers which adversely affect producers therefore need to be curbed by regulators who provide a secondary source of law enforcement. Minimalists believe that existing legislation should be sufficient to prevent illegal activities by marketers. If it is not, then action is needed to make this legislation effective rather than to circumvent the ordinary course of law.

Fourth, because interventionists assume private marketers display less than socially optimal amounts of enterprise in investing in and developing marketing functions, regulators must build into the trading licence requirements to fulfil certain functions deemed to be in the public interest. Government thereby determines to some extent what functions marketers should undertake and which functions are unnecessary and wasteful, and requires regulators to take on a supervisory role. Minimalists, on the other hand, believe that market conditions will determine what marketing functions should be undertaken. If this set of functions is less than socially optimal, the root cause of the problem must be some form of market failure, not the inherent lack of enterprise or good

business sense shown by marketers. The solution is to treat the cause of market failure directly.

Finally, interventionists demand that regulations control quality and grading in a particular commodity market because the marketers will not fulfil these functions to socially optimal levels. Regulators would determine which grading and quality control activities should be undertaken, and force marketers to comply with their decisions. Economic considerations reflected in private business decisions should determine grading and quality control functions under a minimalist approach, subject to adequate general food safety and quarantine laws, with one exception. This exception relates to the occurrence of external costs in commodity export marketing. If the actions of one exporter in disregarding quality control cause external costs to be incurred by other exporters and producers, there is a case for regulatory action by government. An example is where an export commodity is sold in lots by nation rather than individual exporter, and the poor quality product of one exporter causes discounting of the price received by all exporters from that nation. This is the case argued for strict quality control of cocoa production and marketing in Papua New Guinea (see Chapter 4 by Ivarami and Coulter and Chapter 9 by Ivarami and Yarbro).

The existence of external costs as the justification for regulatory activity needs to be stressed. Often, proponents of regulation use evidence of a decline in quality alone as an argument for quality control through regulation.⁵ However, this stance is not justified if the decline in value of output from a fall in quality standards, without any external costs, is more than offset by a reduction in production and marketing costs.

Implications of intervention

The minimalist approach is the one that should be favoured in agricultural export markets in the Pacific islands. The role of the government should be to set the institutional culture, and encourage operational methods in the agricultural marketing system which enable marketers to attain their goals best by directing their own efforts towards the goals of agricultural market development as laid down by the government. The government's regulatory role is not to police, but to create an environment which induces appropriate behaviour from market participants. The interventionist approach is almost certainly a self-fulfilling prophecy in that it will lead to the sort of anti-social marketing behaviour it professes to prevent.

There are some specific shortcomings of the interventionist approach. First, it leads to arbitrary public decision making. Regulators will almost certainly lose touch with economic realities sooner or later, and are likely to cause inefficiencies in market resource use. This arbitrariness occurs in decisions on who should get a licence to trade, what constitutes anti-social and/or illegal

⁵ This appears to be an underlying assumption, for example, in Chapter 9 by Ivarami and Yarbro.

marketing behaviour, the desirability of discharging certain types of marketing functions, and what are economically desirable grading and quality control activities.

The second shortcoming concerns the danger of institutional failure. Control over licences allows political preferences to hold sway over economic factors in deciding who participates in the marketing system and how the system works. Political interference can also dilute the role of marketing authorities as 'policemen'. Finally, short-term political expedience can override the commercial judgement of statutory authorities. For example, managers of stabilization funds have been forced to continue paying for commodities at prices well above current f.o.b. prices despite the fact that the schemes have either run out of funds or, already out of funds, have been forced to borrow large amounts of money to keep the schemes in operation. It makes a mockery of the claim of interventionists that marketers are the ones whose actions are dictated by overly short-term considerations!

Third, rent seeking is encouraged wherever artificial quotas are put on some aspect of a given economic activity. The allocation of licences to trade in agricultural export commodities opens up the opportunity for seeking rents through licences by prospective participants. It is a process that encourages resource misallocation, corruption and inequities in an economy.

Appropriate regulatory functions in a minimalist approach

Even the most ardent minimalist would be forced to admit that a completely *laissez-faire* approach to agricultural export marketing in the South Pacific is not the best option. There are some regulatory functions that governments must undertake. They include quarantine, weights and measures, and enforcement of food safety standards and commercial laws. However, they do not require a regulatory authority to oversee their implementation which is different from the legislative authority which applies to all individuals and corporations nation-wide.

A second group of regulatory functions are more specific to the operations of particular agricultural marketing industries, and are more problematic. Examples include quality control and pricing behaviour of marketers (especially their supposed practices of underpaying farmers for produce purchased, but also price-cutting behaviour for a short-term market share in niche export markets). It has been argued (see Chapter 4) that specialist agricultural marketing institutions are better placed to oversee regulation of these matters because of their greater knowledge of agricultural marketing industries.

The primary issue in the debate over regulatory functions is whether inducement is better than threat. Apart from the likely deleterious consequences of the interventionist approach, outlined in the previous section, there are grounds for believing this approach will be less effective than a minimalist approach: the greater reliance on personalities, the immense difficulties in trying to police a myriad of marketing activities at levels close to the producer (often

these activities are undertaken in villages); poor appreciation by bureaucrats of the value of services offered by marketers and the risks they bear; and the risks of wrongly interpreting pricing behaviour.

Some ideas of how an appropriate set of inducements to socially acceptable behaviour by marketers could be put in place are discussed below. These inducements rely on the willingness of participants in an export market to submit to self-regulation. Such self-regulation, however, can apply only to matters not already covered by the normal processes of law.

Facilitatory functions

Two facilitatory functions which could be performed by marketing authorities are agricultural marketing research and grading. Both functions have been assigned important roles in most marketing authorities. Two other potentially supporting functions are aid intermediation and trade advisory services.

Agricultural marketing research

An assessment is made in Chapter 7 by Fleming of the possible role for marketing authorities in undertaking agricultural marketing research. It is pointed out in the chapter that South Pacific governments generally have given a mandate to marketing authorities, either explicitly or implicitly, to do marketing research. Four research areas are identified as being potentially within the realm of activities of marketing authorities. These areas, applying exclusively to agricultural export marketing, are research into ways of increasing market share, developing new raw material exports, developing exports of existing commodities in a more processed form, and reducing marketing costs.

A survey of marketing research activities, revealed that only the National Marketing Authority (NMA) of Fiji is currently undertaking a comprehensive market research program, albeit in a non-formal manner. The NMA's applied marketing research is mainly directed towards new product exports, in both raw and processed form. Other marketing authorities do not have well-established research programs and none has an established and well-staffed research division. What research work is undertaken can be categorized as attempting to maintain or increase market share.

The assessment of marketing research performance by marketing authorities in Chapter 7, with the exception of some research efforts by the Coffee Industry Board and the Cocoa Board in Papua New Guinea over the past couple of years, is not very encouraging. In none of the four possible research areas is there much evidence of successful research results being applied in the agricultural export sectors. In most cases where success has been discerned, it can attributed either to private export initiatives or to factors specifically relating to agricultural production.

Seven factors are identified as constraining agricultural export marketing research by marketing authorities:

- the commodity orientation of the activities of most marketing authorities;
- lack of incentives to marketing authority staff to undertake marketing research;
- the inappropriate corporate culture of some marketing authorities;
- lack of trained and experienced staff;
- budget constraints;
- lack of government support services in export marketing; and
- lack of integration of agricultural production and marketing research which would provide an impetus to marketing research and peer recognition.

The relevance of each of these factors obviously varies among marketing authorities. Perhaps more importantly, though, these factors tend to interact, making it extraordinarily difficult for any manager, acting alone, to improve research performance.

Wholesale policy reforms to the marketing research processes are therefore the only possible way of achieving significant improvements. The most radical, and the preferred, option is to pass the marketing research function to private marketers. Of course, this is only feasible if private marketers have unfettered rights of entry into and exit from agricultural export markets. If marketing research were seen as the only defensible function of marketing authorities, there would indeed be a case for their dissolution given their current research performance and lack of export market innovation, and the introduction of private export marketing.

If marketing authorities are designated to have a future role in agricultural marketing research, there are some useful policy reforms that should be considered. Two critical reforms would be: to remove the restrictions currently placed on many marketing authorities as to which commodities they handle; and to allow private marketers to compete with the marketing authorities in their existing commodities. These two steps are complementary; one cannot sensibly be undertaken without the other. As an example, such a change in Papua New Guinea would mean that private cocoa and coffee exporters would be allowed to trade in copra and the Copra Marketing Board would be allowed to trade in cocoa and coffee. It would be important to ensure that marketing authorities compete on equal terms with the private marketers, but in practice that might prove to be difficult. A preferred alternative may be to privatize the Copra Marketing Board.

Other research policy reforms require input by governments in the export markets, but with a lower profile. Governments can encourage better marketing research by freeing up budget constraints on marketing authorities, changing the culture in these organizations, providing greater opportunities for staff training, enabling closer links with agricultural production research institutions,

and facilitating better marketing authority access to international trade advisory and support services. Governments can achieve the first two reforms by being less involved in marketing operations, in other words by giving far greater autonomy to marketing authorities which can consequently act more like commercial enterprises.

If the path to private marketing research is chosen, there may be some marketing research activities that are socially desirable but privately unattractive. In this case, three options may be followed. First, it may be felt that the costs of these research activities do not justify undertaking them. Second, the sphere of operations of existing agricultural production research institutions may be expanded to incorporate this type of public agricultural marketing research. Third, a specialized public agricultural marketing institution could be established. Which path is followed would depend chiefly on the volume of research activities that come under this heading.

Grading

Grading as a facilitatory function of marketing authorities can be dealt with briefly. It is undertaken by marketers because they can increase their returns by providing customers with a product that yields greater utility or satisfaction. Therefore, it is a purely commercial issue whether or not to grade, with no potential for the occurrence of external costs.

In these circumstances, there is nothing to warrant either the compulsory grading of exported commodities by marketing authorities or the existence of marketing authorities because of the grading function they fulfil. This does not mean that governments cannot assist in grading. They can usefully provide the necessary grading infrastructure or operate training programs in grading procedures. But the provision of these services is unlikely to require the existence of a statutory authority.

It is important that grading is distinguished from other functions related to quality control. Specifically, as mentioned earlier, governments may intervene if the actions of one exporter in disregarding quality control procedures result in external costs to other exporters or to producers. This ceases to be a facilitatory function and becomes a regulatory function.

Other services

As alluded to above, governments can play a valuable role in facilitating agricultural export marketing by providing a number of services for the public good. Education and training, provision of marketing infrastructure and public research are some examples that have been mentioned. Two other services could be especially important if a change is made from public to private export marketing, and may be best undertaken by statutory authorities. They are the provision of international trade advisory and support services and aid intermediation. The two are somewhat related in that the provision of international trade advisory and support services is unlikely to be done

satisfactorily by Pacific island governments without considerable support from overseas aid agencies. Aid intermediation (incorporating concessional lending) may be necessary because of the lack of existing direct channels for aid and concessional lending between international agencies and private corporations, some of which could be agricultural marketers. These types of facilitatory activities are of a specialized nature, and might warrant the establishment of autonomous government organizations to operate them.

Size economies

The small size of South Pacific economies implies that the operations of export marketing organizations are vulnerable to diseconomies of small size. It has been argued (e.g., by Bae and Coulter in Chapter 10) that marketing authorities in these small economies, being monopsonists and monopolists, are able to realize what economies of size exist or at least minimize diseconomies of small size.

Empirical testing of this proposition is reported in Chapter 5, based on copra (and coconut oil) marketing. The copra industry is best suited to analysis of economies of size in South Pacific export marketing because it takes place in all five countries which are the focus of this book, and it is in the hands of marketing authorities with monopsonist buying and monopoly selling powers at the export marketing stage. Also, marketing functions of the various marketing boards have been fairly similar, except for the complication of coconut oil processing.

Another source of cost savings is termed economies of scope, achieved by marketing additional commodities, thereby expanding the scope of operations and lowering average total cost. Diseconomies of scope would exist in export marketing if a firm is operating with average total costs higher than would exist if it were to add further commodities to those it already markets. Given the narrow commodity orientation of many of the marketing authorities in the South Pacific, it would be very useful to learn if they suffer from diseconomies of scope in marketing. Unfortunately, lack of data did not permit any empirical work to be carried out.

Two analyses were undertaken, and results are reported in Chapter 5. The first comprised forty-eight observations across five copra marketing boards. Second, an analysis was undertaken which included observations covering the period 1974–87 for Papua New Guinea and Solomon Islands only. Of the functional forms considered for use in studying the relationships between average total costs and volume of copra throughput, the log-linear and quadratic functions provided results of reasonable statistical quality and considerable interest.

The major implication to flow from the study is that economies of size are present in copra export marketing in the South Pacific and the economies are quite substantial, especially at low levels of throughput. The level of throughput

at which most economies of size can be realized appears to vary among the countries, and is probably influenced strongly by their organizational structure. Larger organizations with higher overheads reap economies at higher levels of throughput. For example, economies are still being achieved up to 100,000 tonnes throughput in Papua New Guinea whereas most economies have been attained in Solomon Islands with a throughput of around 30,000 tonnes.

An important policy inference is that the commodities board in Solomon Islands does not suffer from diseconomies of small size to any greater extent than the board in Papua New Guinea. Both have around the same minimum cost operations. It indicates that marketing firm structure is flexible enough to enable commodity boards to take advantage of any size economies that exist. However, for boards operating with levels of throughput lower than those in Solomon Islands, it appears that potential size economies are smaller, and diseconomies of size appear to become very great at levels of throughput below 5,000 tonnes. It also should be noted that the board in Solomon Islands, similar to other boards with relatively small throughputs, is vulnerable to significant shifts in volume of throughput. Once throughput levels move away from minimum cost levels, average costs increase much more sharply than they do in Papua New Guinea.

There is, then, a *prima facie* case for monopolies, or at least for limiting copra exporting to a small number of firms, to take advantage of any size economies. However, four other issues should be considered before a definitive recommendation can be made to that effect.

First, there are viable forms of monopoly or oligopoly other than marketing authorities. These include private corporations, as in the cocoa and coffee industries in Papua New Guinea, joint ventures and marketing cooperatives. It is impossible to do justice to a comparison of these four alternative organizational structures in this chapter. However, it follows that, even if a monopolistic or oligopolistic structure has size advantages in copra export marketing, such a structure might not be best achieved through a marketing authority, and may not be best for export industries other than copra.

Second, there are important dimensions of efficiency in addition to size economy which may possibly outweigh size economies. Scope efficiency is of particular interest. It is likely that if private marketing firms already operating in the agricultural marketing system were to add a commodity under statutory marketing control to their portfolio, they could achieve scope economies greater than existing size economies.

Third, it has only been possible to judge economies of size in relation to marketing authorities. The extent to which they exist in other organizational forms which may combine factors of marketing in different ways remains an unexplored issue. The differences in the cost relationships between Papua New Guinea and Solomon Islands demonstrate the possibility of this point.

Finally, one of the major sources of potential size efficiency, the ability to reduce international freight charges, was excluded from the models used for cost analysis in Chapter 5. Bae and Coulter (Chapter 10) made this point in their

argument for a monopsonist marketing board to exploit economies of size. They claimed that shippers like dealing with a single marketer, and contrasted the costs of shipment of copra to those of cocoa and coffee. Their contrast, which shows lower costs for copra, is invalidated by their own comments later in their chapter when they point out that the characteristics of the crops are different, and cause the marketing costs of cocoa and coffee to be necessarily greater than those of copra. What is the evidence that Papua New Guinea copra shipment costs are lower than those of other countries?

A survey of copra freight charges and a separate regression analysis of the relations between f.o.b. prices and size of throughput (see Chapter 5) indicated that such gains would be small at best. Current freight charges per tonne of copra shipped vary between US\$75 and US\$85, with the largest exporter—Papua New Guinea—having a freight rate higher than that for Solomon Islands.

To sum up, there are grounds for claiming the existence of size economies in export marketing in the Pacific islands. They appear to be greatest at low levels of throughput. However, an ability to take advantage of these economies does not necessarily require the existence of a marketing authority. Furthermore, marketing authorities in their current forms may be missing out on potential economies of scope, and may fare worse than private marketers in terms of other dimensions of efficiency.

The future role of marketing authorities

The following recommendations on the future role of marketing authorities in South Pacific agriculture follow the 'minimalist' approach.

Trading

There appears little justification for a continued participatory function in agricultural export markets by governments through their agents, the marketing authorities. Historically, the main reason for government participation has been to protect the interests of smallholders. No compelling evidence exists to suggest that marketing authorities provide higher returns than private marketers to small agricultural producers. At best, they can match the private marketers.

In these circumstances, private marketing is favoured for two reasons. First, there are resource costs of government marketing activity so that, other things being equal, private marketing should be a more cost-effective option. Second, regardless of their past performance, marketing authorities are always susceptible to mismanagement in the future because of political interference.

Stabilization

If a universal buffer fund scheme is thought to be needed, there has to be a form of compulsion in its operation. This makes it an obvious function of marketing

authorities. The stabilization issue is, admittedly, not a clear-cut one in terms of the rationale for government marketing activity. Arguments in this book highlight both the pros and cons of stabilization schemes. Conclusive evidence on the impact of the schemes has not yet been presented.

However, it is felt that the arguments against such schemes, in theory and in terms of the evidence that is available, far outweigh the likely benefits. It surely must be up to the proponents of such schemes to gather further evidence to clarify this issue and to prove their case. In small Pacific island nations stabilization schemes are costly in financial and human resources and if they are not yielding tangible benefits, it is wasteful to continue them.

It is argued that copra stabilization is important from a social viewpoint in that there is no other economic activity that can replace it in remote areas. There are two arguments against this point. First, it still needs to be proved that there is no alternative economic activity to which people in these remote areas can turn. Second, proponents of this argument are confusing stabilization with price support. Stabilization, as an inherently short-term measure, is unlikely to be the long-term panacea that is demanded for socially-disadvantaged people in remote areas. Moreover, if these remote economies have to be subsidized, there are better, more transparent means available to achieve this than tinkering with the pricing mechanisms for export commodities.

Regulation

If no participatory role is envisaged for marketing authorities, the only plausible way in which governments can influence agricultural marketing activities is through regulation. There seems to be a consensus on the need for some regulation in some circumstances. However, there are substantive differences in opinion on how the regulatory function should be discharged.

First, regulatory functions that government must undertake include quarantine, weights and measures, and enforcement of food safety standards and existing general commercial laws, but none of these requires a special regulatory body in agricultural marketing. Matters of market behaviour such as pricing (especially) and adherence to quality requirements are where the approaches of minimalists and interventionists diverge. Minimalists believe that inducement is always a better alternative to the threat of punitive measures. The appropriate starting point is to determine what sort of marketing environment would best encourage private marketers to act in a manner convergent with the government's agricultural market development goals.

The approach should be not only minimalist in terms of marketing activity but also gradualist. If market behaviour is still unsatisfactory after establishing what is thought to be a suitable environment, regulators need to ask what is causing it to be so, and what is the least interventionist way of further dealing with the problem. For example, the most common reason for marketers' exploitation of smallholders by paying them a low price for their produce is the latter's ignorance of the going rate. A good market intelligence and reporting

service is usually the best way to solve this problem. This is purported to occur in the cocoa industry in Papua New Guinea, although it is admittedly not without cost. The worst approach is to put offenders in jail; all this achieves is fewer marketing services available to smallholders.

A good deal of concern is expressed in the South Pacific about so-called 'fly-by-night' opportunists who masquerade as marketers in under-developed marketing systems. Regulation, it is argued, is absolutely essential to prevent these people from obtaining goods from smallholders and never paying them, leaving the smallholder out of pocket and mistrustful of future commercialization of their farm activities. This is a legitimate concern, but draconian regulation is not required to prohibit it. For example, a voluntary licensing program can be put in place where marketers put down a deposit or take out some form of default insurance, and pay a small fee to join a marketing association. This organization can provide facilities for its members and promote them to smallholders as bona fide marketers. In the event of abscondment and failure to pay producers by any member, the deposit money accumulated can be used as an insurance fund to protect the smallholders from financial loss. This would not prevent growers from selling to unreliable marketers, but in that event it would be a case of 'seller beware'.

One of the major reasons for the call for a strong regulatory role in agricultural marketing in the South Pacific is that existing commercial laws are not being enforced. While it is tempting to consider alternative means of regulation if this is indeed the case, the logic is flawed. If existing laws are not being enforced and vigilance is low, circumventing these laws and establishing a second set of (probably more arbitrary) measures operated by a statutory authority (a 'second-best' solution) is treating the symptom of the problem and not its cause. If the secondary means of enforcement is going to work, why doesn't the legal system? The 'first best' situation in these circumstances is to ensure that commercial laws which form part of the overall legal system are made to work, and that those responsible for their implementation are vigilant. If anything, putting resources into an alternative regulatory system is going to reduce the resources available to operate what is already a legal system under strain.

In matters of market behaviour within the law, it is in the long-term interest of most marketers to see that fair trading takes place. In these circumstances, self-regulation should be a viable option to policy makers, to be preferred to a punitive system of tight regulation which is likely to be more costly, more arbitrary in its judgements and less effective.

Facilitation

In the earlier commentary on market facilitation, only a limited set of facilitatory functions were considered likely to be best discharged by a statutory authority. Possible contenders are thought to be international trade advisory and support services, aid intermediation and agricultural marketing research of a public

good nature. Even in these cases, it is not obvious that marketing authorities would be the best agents of government.

Other facilitatory functions which are related to agricultural marketing are unlikely to be suited to marketing authorities. These include the establishment of marketing infrastructure, education and training, provision of finance and the setting of industry standards.

Exploiting size economies

The existence of benefits from exploiting size economies is acknowledged. What is open to interpretation is the best way of exploiting these economies. It is argued here that, when coupled with economies of scope, the best form of exploitation of size and scope economies is to remove restrictions on trade according to commodity. Probably greater economies could be reaped if marketers were allowed to offer marketing services (input and product) across a range of (not necessarily all agricultural) commodities. In this way, marketers would become suppliers of a range of marketing services as opposed to sellers of particular commodities, as marketing authorities tend to be at present.

The implication here is that it is not necessary to protect the statutory rights of marketing authorities as sole marketers of particular commodities. However, it does not automatically follow that there is no future role for current marketing authorities. They could be allowed to continue to operate, but in level competition with private traders. The privatization of some of the more efficient marketing authorities might be an attractive option for governments. Alternatively, allowing them to continue to operate in competition with private marketers may be seen as an effective way of inducing the latter to be competent and fair in their dealings with smallholders.

Recommendations for policy reform ---

Base conditions

Any recommendations for changes in policy need to be made bearing three factors in mind. First, recommendations on the future role of marketing authorities must take into account the current situation. Many marketing authorities are the only form of marketing organization available to producers. Their sudden demise, for example, may cause substantial damage to a valuable export industry, at least in the short run. Hence, management of policy reform might be as important as the reform itself.

Second, any policy reform suggestions which affect the role of marketing authorities need to be made keeping in mind the current depressed market conditions for many of the main agricultural commodity exports of the South Pacific. For example, it is unlikely that private marketers will rush to fill the place of a monopolistic copra marketing board given the parlous state of the

industry at present. If copra prices were to increase substantially, the response might be quite different.

Third, some acknowledgment is needed of the small-scale and fledgling nature of private industry in the South Pacific. A frequent criticism made of private industry in the region is its unwillingness to become involved in certain export industries. Most likely, there are sound economic reasons why private marketers do not become so involved, given their size, cost structure and other commercial circumstances. If governments feel there are good social reasons why a particular export industry needs to be established or maintained, then it would need to find a way of supporting the operations of a local private industry without 'choosing winners' or creating a climate in which 'rent-seeking' becomes rampant.

Changes required

The major recommendation for policy reform is to reduce considerably the role of marketing authorities in agricultural export marketing in the South Pacific. Major functions which should be removed from the authorities include stabilization, regulation already covered by existing laws, punitive measures on market behaviour, some facilitatory functions and monopoly trading.

There will still be a regulatory role for marketing authorities, but it should be directed towards inducing appropriate market behaviour; there may still be some facilitatory functions, and marketing authorities may be allowed to trade if desired, but in competition with private marketers.

Implementation

It would be naive to expect the above changes to be implemented overnight. Policy makers do not commence any policy reform in a vacuum, and the process of agricultural market development, like any part of the development process, requires a long time to take effect.

In the case of removing the rights of marketing authorities to trade, current depressed market conditions are likely to reduce the enthusiasm of private traders for entering into commodity export marketing. This is particularly likely in the copra export industry as long as the world coconut oil and copra prices remain low. If the dissolution of copra marketing boards is seen as a long-term goal, disbanding them now is unlikely to be an effective way to proceed. Better alternatives would be simply to remove monopoly powers (this may have no short-run effect at all if private traders find the market unattractive) or to establish a time-table for phased withdrawal, to ensure that other marketing alternatives can materialize.

Above all, it is crucial that policy makers get the regulatory environment right before any policy reforms are carried out. Certain regulatory functions are crucial to successful agricultural export marketing in the South Pacific. Witness the devastating impact on Tongan watermelon exports to New Zealand when fruit fly was detected. Also, regulatory matters are likely to take the longest time

to resolve. If self-regulation by marketers is considered appropriate, the government may have to take steps to encourage and facilitate the establishment and operation of marketing associations.

Removal of the stabilization function is not going to be easy because of the current parlous states of many stabilization funds. In some instances, the viability of the marketing authority is put at risk by the deficits incurred in a fund. In the case of marketing authorities with otherwise exemplary records, such as the Cocoa Board in Papua New Guinea, this would be a shame. Decisive action is therefore needed which, it would appear, demands that the relevant government pick up the bill for existing deficits. If inclined, governments should also meet future deficits that occur out of government revenue before the stabilization schemes are wound up.

Suggestions for future research

The need for further research on the role of marketing authorities in agricultural export marketing in the South Pacific is considerable if policy makers continue to see this role as being major. While none of the research is going to be easy, four areas currently stand out as research priorities. First, more work is needed on the relative efficiency of private marketers and marketing authorities. As stated in the text, it is up to proponents of marketing authorities to undertake this research.

Proponents of marketing authorities also need to take the lead in the second area requiring research—the impact of price stabilization schemes. Two areas here need further research:

- the beneficial impacts of stabilization on small producers' welfare and on the general economy need to be established; and
- the costs of government stabilization activity should be quantified.

The third area of potential research is that of economies of scope. The impact that liberalization of agricultural export marketing will have on average marketing costs needs to be established for each country.

Finally, it would be useful to do some applied 'in-market' research into the changes in private marketing performance brought about by the adoption of different regulatory approaches. Pricing policies and product quality management of private marketers are two processes that would be expected to change as different regulatory approaches were tried.

Part III — Assessment

Hugh Coulter

The case for marketing authority activity in agricultural export marketing

In the assessment above of the future role for marketing authorities in agricultural export marketing in the South Pacific Fleming overestimates the likely contributions of private traders, and underestimates the contributions that marketing authorities can make to efficient and equitable marketing of agricultural commodities. It is the main purpose of this part to argue the case for a continued prominent role for marketing authorities in agricultural export marketing.

The philosophy of this approach is to devolve export marketing upon private traders where it can be clearly demonstrated that they will perform marketing functions better than marketing authorities. Where this superiority is not obvious and it is possible that the costs of a shift to private trading would be more than benefits derived, the approach is to leave the export marketing functions with marketing authorities. Even where a shift to private export marketing is recommended, marketing authorities have a role in preventing private traders from operating in a manner that is against the interests of others involved in the production and marketing of the commodities concerned.

Both past and current circumstances in agriculture in the South Pacific are central to the proposition that marketing authorities should continue to play a prominent role. The past record of private marketers exporting agricultural commodities without strict regulatory control is not good. Current circumstances indicate that there will be major costs if monopolistic marketing authorities change to private marketers operating without substantial government influence. It is not, as Fleming contends, the case that the advocates of intervention by marketing authorities should have to prove their case. Marketing authorities already exist in the marketing systems of most major agricultural export commodities. It is up to the advocates of change to prove that benefits will outweigh the costs and inefficiencies that will accompany a changeover.

The current situation in Western Samoa may be a harbinger of the problems that arise from the wholesale privatization of an export marketing system. The future of copra and cocoa exports has been placed in jeopardy by the disbanding of the Copra and Cocoa Boards in 1990. The headlong rush into privatization (in this case, engineered by the Asian Development Bank) left in its wake

deteriorating quality and unreliable delivery of the commodities. International aid agencies have forced privatization of marketing authorities upon governments in developing countries without understanding the role of marketing authorities or generating appropriate alternatives.

Comparative advantages

The reasons to support the continued strong presence of marketing authorities in agricultural export marketing in the South Pacific can be summarized as follows:

- Deregulation of agricultural industries, with subsequent reliance on private marketing activity, assumes perfect competition which is never the case in the South Pacific.
- Because some marketing authorities play a dual role in respect of stabilization and marketing, administration and accountability are best vested in one organization in the marketplace.
- Economies of size are best achieved by a small number of exporters as is demonstrated by the copra boards in Papua New Guinea and Solomon Islands.
- Marketing authorities have proved to be effective regulators of quality and orderly marketing in agricultural export industries. This has been well illustrated by the Cocoa Board of Papua New Guinea.
- Stringent quality control can be more effective through a marketing authority than through numerous private marketers, as demonstrated by Tongan problems with infestation of fruit fly in water melons exported to New Zealand.
- In times of low prices, private operators, which tend to have short-term interests in export industries, may disappear.
- Unlike the private sector, marketing authorities have access through the government to outside funds such as Stabex, to support an export industry.
- Marketing authorities can control production through export quotas and are in a position to maintain high prices for export commodities.
- The marketing authority is a suitable organization to discharge obligations of the state related to international commodity agreements as it is in a better position to appreciate the needs of the industry and respond quickly.
- Marketing authorities can strengthen the position of farmers in relation to commercial buyers through encouraging farmer representation on the board of the marketing authority.
- Marketing authorities promote the longer-term interests of an agricultural export industry compared with the private sector which typically has short-term goals.
- Market research for an industry should be centralized, and marketing authorities are the only suitable organizations to undertake this function.

Response to the case for private marketers

The statement above by Fleming that 'agricultural marketing might be better undertaken by private marketers' assumes a competitive market. Yet, as stated above, this is never the case in the South Pacific. Because of the low volume of commodity throughput, there are seldom sufficient middlemen, including exporters, to ensure that a competitive marketing environment exists. There is a danger in assuming that market privatization which is good for African nations is good for the South Pacific because the competitive situation is quite different. Lack of a competitive environment is a key justification for active government involvement in agricultural export marketing. Private marketing will only be efficient if there is workable competition.

Fears of the exploitative nature of private marketers were argued by Fleming to be unjustified (Part II). This is a sweeping statement in light of the excessive margins taken by private cocoa exporters in Solomon Islands (Fleming and Antony, Chapter 3). Problems in coffee exporting in Papua New Guinea also cast doubt on the statement. Private coffee exporters were advanced funds for stockholding purposes in the 1980s. One exporter who received K11.7 million did not repay the advance (Papua New Guinea, Ministry of Agriculture and Livestock (MAL) 1991:1), illustrating the need for tight regulations. Fleming argues for insurance schemes to cover such eventualities, but it is doubtful that such a scheme could cover a default of this magnitude.

It is incumbent upon opponents of marketing authorities to demonstrate that private exporters will have lower margins and greater robustness in adapting to a changed market environment where competition is limited. The copra marketing boards in Papua New Guinea and Solomon Islands have already demonstrated that they can keep margins lean and adapt to changed market conditions.

The case against a role for marketing authorities in stabilizing agricultural prices in the South Pacific is flawed by a misrepresentation of the evidence on the impact of the price stabilization schemes. First, there appears little doubt that these schemes have helped bring about macroeconomic stabilization in Papua New Guinea, and there is every reason to believe that the situation is similar in other Pacific island countries. Fleming's assertion that the schemes 'made little difference to broad money supply' in Papua New Guinea is inaccurate. From the inception of cocoa and coffee funds in the mid-1970s until 1987, fund balances were a significant proportion of broad money supply, peaking at 30 per cent (Asian Development Bank 1990:63). In a sector which has difficulty in mobilizing savings, this is a remarkable achievement, unmatched by the performance of alternative rural savings schemes. More recently, the significance of fund balances has declined substantially due to falls in their values and economic growth. The Asian Development Bank (1990:66) concluded that the stabilization funds provided 'a useful mechanism to stabilize significantly the monetary impact of the coffee and cocoa boom' in the 1970s'.

There is also an important foreign exchange effect. Stabilization fund balances in the Papua New Guinea Central Bank save foreign exchange because there is no other domestic kina counterpart with which to generate demand. In the early 1980s, these balances were as much as one-third of foreign exchange reserves.

The conclusion reached by the Asian Development Bank (1990:x) in respect of stabilization in Papua New Guinea is probably applicable to other countries in the South Pacific: 'On balance, while the funds have contributed to macroeconomic stability, their existence could not be justified upon their macroeconomic benefits alone.'

However, the evidence supports the view that the stabilization schemes have also had a beneficial impact on producers' welfare and savings. There is strong evidence, for example, that price stabilization schemes in Papua New Guinea have increased producer welfare by leading to more stable incomes. Income variation has been reduced by 13 to 38 per cent for copra, cocoa and coffee producers (Asian Development Bank 1990:48). Furthermore, bank managers in Papua New Guinea have stated that they have been influenced positively in their lending decisions in the cocoa and oil palm industries by the existence of stabilization schemes for these crops during the 1980s (Asian Development Bank 1990:x).

In respect of the impact of stabilization on savings, once again the conclusions of the Asian Development Bank are pertinent. It was found that 'stabilization funds have had an important positive effect on overall savings and investment' (Asian Development Bank 1990:68). This finding is supported by Manning (1987:78) who stated that 'the anti-cyclical effects of stabilization funds probably contribute to that stability which encourages investment'.

Finally, Fleming's denigration of the role of marketing authorities in promoting agricultural marketing research is unwarranted. The Coffee Industry Board has played a key role in promoting and substantially increasing the sales of Papua New Guinea coffee under the New Guinea Gold brand in New Zealand. The Cocoa Board played a key role in identifying a market for, and promoting, cocoa in the Federal Republic of Germany in the late 1970s and early 1980s, resulting in the share of the German market increasing from 6 per cent to over 50 per cent in that period (Coulter 1991:75). The Cocoa Board was also involved in improving cocoa quality in response to world market demands in the late 1980s.

Structure of agricultural export marketing systems

If the argument in favour of a continued prominent role for marketing authorities is accepted, two major questions need to be resolved. First, what is the appropriate organizational structure of agricultural export markets? Second, what is the appropriate corporate structure for marketing authorities?

The appropriate organizational structure of agricultural export marketing systems in the South Pacific should entail a strong involvement by marketing authorities, although the nature of their activities will vary and, in many cases, a major presence by private marketers is also justified. The relative importance of marketing authorities and private marketers will depend largely on the type of commodity and the nature of its export market. A characterization of the structures of export marketing systems for major export commodities in six South Pacific island countries is presented in Figure 1.2.

Figure 1.2 Suggested commodity market structure in six South Pacific island countries

Country	Commodity	Organizational structure
Fiji	Copra/coconut oil	Private exporters + regulatory board
	Cocoa	Private exporters + regulatory board
	Sugar	Fiji Sugar Corporation monopoly
	Ginger	Private exporters + regulatory board
Papua New Guinea	Copra/coconut oil	Marketing board + regulations
	Cocoa	Private exporters + regulatory board
	Coffee	Private exporters + regulatory board
	Spices	Private exporters + regulatory board
Solomon Islands	Copra	Marketing board + regulations
	Cocoa	Private exporters + regulatory board
	Spices	Marketing board + regulations
Tonga	Copra/coconut oil	Marketing board + regulations
	Bananas	Marketing board + regulations
	Vanilla	Marketing board + private exporters + regulations
	Pumpkins	Marketing board + private exporters + regulations
	Root crops	Private exporters + regulations
Vanuatu	Copra	Marketing board + regulations
	Cocoa	Private exporters + regulatory board
	Coffee	Private exporters + regulatory board
	Kava	Private exporters + regulatory board
Western Samoa	Cocoa	Private exporters + regulatory board
	Copra/coconut oil	Private exporters + regulatory board
	Root crops	Private exporters + regulations

One of the main features of this characterization is the continued major role for marketing authorities in copra export marketing. This is necessary for three principal reasons. First, copra marketing authorities in most of the countries (Tonga and Western Samoa being the exceptions) have demonstrated that they run efficiently under public control. Second, there are economies of size in copra export marketing which are best exploited by marketing authorities, notwithstanding Fleming's arguments to the contrary. The case in favour of marketing authorities as the organizations best able to exploit size economies is

made in detail by Bae and Coulter (Chapter 10). Third, given the current depressed state of the world copra and coconut oil markets, attempts to privatize existing export marketing boards are unlikely to attract the sorts of private marketers needed for the long-term health of the industry.

A second important feature is the strong need for regulatory control in industries which are best left to private marketers. This is particularly true for cocoa and coffee, but also true for other crops such as vanilla and niche export commodities which are mainly horticultural crops and spices. Many of these export commodities can also benefit from inputs by authorities which facilitate their export marketing.

Third, export commodities with very exacting quality requirements, such as bananas, are best left in the hands of one organization, preferably a marketing authority.

Fourth, the sugar industry in Fiji provides a good example of successful integration by a public enterprise of input and product marketing functions with smallholder production activities. Although it is almost wholly owned by the Fiji government, the Fiji Sugar Corporation is operated like a private corporation, and is registered under the Fiji Companies Act.

Finally, commodities with which private exporters are very familiar in terms of product characteristics and export requirements (e.g. root crops and perhaps kava) are best left to private exporters. Even here, however, there are likely to be some important regulatory functions (e.g. phytosanitary control) which are best discharged by marketing authorities.

Desirable characteristics of marketing authorities ---

If a strong role is envisaged for marketing authorities in agricultural export marketing in the South Pacific, the most critical issue is: what should their organizational structure and characteristics be? In this section, this issue is addressed first by outlining some desirable features of the future marketing authorities and, then, by scrutinizing the proposed corporatization of agricultural marketing in Papua New Guinea.

The key to the success or failure of a marketing authority in agricultural export marketing lies in the regulations governing its operations and the way it is structured. Experience dictates that, to be successful, a marketing authority should have the following six characteristics:

- It should operate according to commercial principles, and should not be constrained by particular social objectives.
- Its board should contain representatives from all facets of the industry concerned with a particular export commodity.
- Its board should be able to take decisions and courses of action, free from any political interference.
- It should be subject to regular technical and financial audits.
- There should be a corporate planning process which enables the board to make long-term decisions based on sound commercial principles.

- An integral part of the corporate planning process should be a well thought through international marketing strategy.

An examination of the successful marketing authorities outlined by Antony and Fleming (Chapter 2) shows that these organizations conformed to most if not all of these principles.

An assessment of the proposed industry corporations in Papua New Guinea

This section addresses some key issues and considerations in evaluating the desirability of industry corporations. A detailed account of their introduction in Papua New Guinea is presented in Part I.

No increased cost to the producer It will be necessary to demonstrate to the respective industries, and to the marketing authorities, that the resources required to operate the industry corporations can be financed from existing funding levels. With the present low prices and depressed world market outlook, it is unlikely that producers would fund additional costs associated with corporatization. Given the present levels of efficiency of existing commodity institutions, it may be very difficult to maintain costs at this level.

No extension levy until prices recover Until prices move above their stabilized ten-year moving average level, no extension levy should be introduced. Financial arrangements in the interim will need to be secure and free from annual budget allocation debates. Promises made by the government to the research institutes for research funding were never realized.

In the submission to the National Executive Council on the Coffee Industry Corporation, there is an acknowledgement that the capacity of the government to provide financial assistance is at present severely constrained. There can be no guarantee that funds will not be constrained in the future. If it does, growers will be faced with increased levies or inadequate service from the proposed corporations.

Effective existing commodity institutions A recent study by Coulter (1991) has demonstrated that existing institutions in the cocoa and copra industries are working effectively. Corporatization does involve some risk in that the reorganization may lead not to increased efficiency, but rather to reduced efficiency. The establishment of the Food Marketing Corporation and Livestock Development Corporation in Papua New Guinea demonstrates this effect.

Capricious nature of government decision making Coffee, oil palm, cocoa and coconut are long-term tree crops which require long-term policies. Boards have demonstrated this long-term commitment, and have been able to put this commitment into effect because of their autonomy. Governments trying to introduce institutional reform, however, have been shown to be capricious.

Timing	An industry corporation has yet to prove effective and food marketing and livestock were early casualties of corporatization. It would therefore seem sensible to have a phased program over an extended period, not just one or two years. Coffee and possibly oil palm corporations should be implemented first and, after a period of successful operation, cocoa and copra should then be considered.
Smallholder representation	Suitable smallholder representation on the corporation is a potential problem, not only in the selection process but in ensuring that the smallholders appointed have the necessary commercial and management skills to control a complex organization. There is a danger that estate sector representatives could dominate the proceedings of a corporation board meeting. (Some government officials complained of dominance by planters in the Cocoa Working Group.)
Estate sector participation	On the grounds of equity, there is no reason why the estate sector should contribute (via a levy) to an extension service which does not benefit them. However, some may argue that research has benefited the estate sector more than smallholders, so in fairness the estate sector should contribute to the extension services for the smallholders.
Impact on remaining extension services	It is likely that corporations will be able to attract the more competent extension officers. If this does occur, the effectiveness of the remaining food and minor crop extension services is likely to be reduced. Provincial governments, no doubt, will have much to say on this issue.
External assistance	The establishment of the Coffee Development Association (CDA) was facilitated to a large extent by external assistance provided under the Australian International Development Assistance Bureau (AIDAB)-funded Coffee Rehabilitation and Rust-Control Project and by experienced Papua New Guinea extension specialists. Although the Cocoa Board is about to receive external assistance for the Cocoa Quality Improvement Project, this project has limited extension inputs and has a much narrower focus than the Coffee Project. External technical assistance must be a prerequisite for the establishment of an industry corporation.
Indebtedness	Most marketing authorities in the South Pacific, on behalf of their respective industries, have borrowed heavily from their respective governments. The Cocoa Board of Papua New Guinea, for example, had borrowed over K30 million, while the Copra Marketing Board had borrowed K20 million by the end of April 1991. This indebtedness is additional to commercial loans to growers from the commercial banks and the Agricultural Bank of Papua New Guinea. The overall indebtedness of the major tree crop industries is over K200 million.

Establishing a corporation as a private company under the Companies Act with such indebtedness is foolhardy. The marketing authorities would need to convince the government to cover these debts prior to establishment of any industry corporation.

Institutional strengthening The lessons learned from the ineffective World Bank-financed Agriculture Support Services Loan in Papua New Guinea are relevant to the proposed corporatization. A key element of the loan involved institutional strengthening. The first problem of the loan was that institutional-strengthening projects were not carefully geared to implementation capacity. They were too ambitious. Second, inadequate account was taken of constraints to implementation. It is necessary to consider the institutional constraints under which they are likely to be introduced. Third, institutional-strengthening projects should be based on an evaluation of the management capability of the institution. Fourth, project supervision should carefully assess personnel requirements. Finally, institutional strengthening requires strong, long-term commitments.

Conclusions

The main conclusion to be drawn from this assessment is the continuing need for a major role by marketing authorities in Pacific island nations. Regulations governing their functions and their organizational structure will be important determinants of the success of their operations.

The Government of Papua New Guinea is introducing industry corporations for the main export commodities. The major aims of corporatization are industry financing of extension, research and regulatory activities, control by elected representatives of the various facets of the industry, and improvement of returns to smallholders through more efficient marketing.

Corporatization is not a panacea for extension and industry inefficiency as it does not guarantee an improvement in efficiency. Indeed, corporations have a very chequered history in Papua New Guinea, particularly those associated with the Department of Agriculture and Livestock such as the Food Marketing Authority, the Livestock Development Corporation and the National Plantation Management Agency. These three corporations have all been financial failures and inefficient organizations.

The approach adopted by the Papua New Guinea government through the establishment of working groups has encouraged healthy debate on the issues underlying the introduction of corporations. The implementation of the corporations must be handled carefully if positive net benefits are to be realized. A staged introduction of corporations is recommended so that lessons learned in setting up the first corporations can be incorporated into subsequent ones.

CHAPTER 2

Agricultural exports and marketing authorities in the South Pacific: an overview

George Antony and Euan Fleming

There is a growing development imperative for South Pacific island countries to strengthen their economic independence. Because they rely on imported processed commodities and capital goods, the maintenance and further development of export performance is crucial. The agricultural sector has been, and continues today to be, an important source of foreign exchange as well as a primary source of cash income for a large proportion of the islands' populations. South Pacific governments, like the governments of other developing countries, have assigned marketing authorities or commodities boards a major role in marketing traditional cash crop exports. A substantial body of evidence has accumulated indicating that many of these authorities have failed to perform the tasks assigned to them.

The purpose of this chapter is to provide a historical and international context for evaluating the performance and future role of marketing authorities in the South Pacific. A regional history of agricultural export commodities is sketched in the first section. The second section comprises country studies of Papua New Guinea, Tonga, Solomon Islands, Western Samoa and Vanuatu. In each study the development of agricultural exports, recent export trends and the history and current functions of marketing authorities are discussed.

A brief overview of marketing authorities in other developing countries is provided in the final section, focusing on the success stories. It also raises several questions which need to be considered in deciding the future of agricultural marketing authorities in the South Pacific. In particular, this last section looks at whether there are region-specific factors which enable marketing authorities in the South Pacific to avoid problems which are endemic elsewhere, and considers various organizational structures, including marketing authorities, which might

best perform particular roles in assisting the development of a viable agricultural export sector.

Early trade history

In the early history of South Pacific contact and trade with Europeans, the main export items of the region were coconut oil and later copra. These commodities were initially collected from the islands by ships sailed by motley crews of adventurers, misfits and pirates. Production of export commodities was placed on a firmer footing when plantations were established. The first plantations appeared in Western Samoa after the mid-1800s, in Fiji in the 1870s, and New Guinea, Solomon Islands and New Hebrides (to become Vanuatu) towards the turn of the century. The first production of agricultural commodities for sale by the local population occurred in Western Samoa. In the beginning, the only export crop was the coconut; however, the German colonizers were active in introducing plantation crops, e.g., cocoa, into the region.

In Papua New Guinea the Australian administration began to build a system of agricultural research and extension in the late 1920s (International Service for National Agricultural Research 1982). Many of the research and extension activities were aimed at export commodities, and they succeeded in laying the foundations of a resilient agricultural export sector. Australian prospectors entered the highlands of New Guinea in search of gold in the 1920s. Discoveries of the metal at that time gave rise to an export structure that still distinguishes Papua New Guinea from most other Pacific island countries. Unlike plantation agriculture, mining in the South Pacific is an enclave activity.

Departure from purely subsistence agriculture happened later in Solomon Islands and Vanuatu than in other countries. However, village-based smallholder participation in copra production for export had already commenced in the nineteenth century. Apart from Western Samoa, it was not until the 1960s that subsistence agriculture, the dominant economic activity of the indigenous populations in the South Pacific, began to open up to outside influences. With the exception of Tonga, which has never been a colony, changes in economic priorities after independence have been profound, particularly the shift towards increasing foreign exchange earnings from exports.

Commodity and price trends

Agriculture is still the primary source of exports in the South Pacific region. The most important agricultural exports are products of tropical tree crops. As these can be grown at a wide range of technological levels, they are well suited to both intensive plantations and semi-subsistent village farming systems.

Total regional exports of agricultural commodities over the period 1960–88 are presented in Figure 2.1. Five main points can be made in relation to this diagram:

- The total value of exports during the study period has been dominated by the exports of two countries—Fiji and Papua New Guinea.
- There is little commonality in major export commodities across nations, except for coconut products.
- An increase in real export values occurred from 1960 to 1980, led by an expansion in export values of three commodities—coffee, cocoa and sugar. However, values have been fairly static during the 1980s except for a boom in world commodity prices in 1984–85.
- The real value of exports of coconut products has gradually declined over the study period, again except during 1984–85.
- Despite recent efforts to diversify agricultural exports, a small number of 'traditional' commodities still dominate the export sectors. So far 'niche' export commodities have failed to make much of an impression throughout the region.

Figure 2.1 Agricultural exports of South Pacific island nations

US\$ million (1975 values)

Some further comments are warranted on this last point. There is some diversification evident in the export structures of individual countries, but its direction varies from nation to nation. The larger nations have valuable tropical forests. Almost all Pacific island countries have extensive fisheries grounds, and those along the Pacific fault line have substantial mineral resources. Tourism has been expanding slowly. Apart from lack of infrastructure, tourism has been viewed with suspicion because of its potentially deleterious effects on traditional values.

Coconuts

As mentioned above, the first commodity produced in the South Pacific was copra and it remained the backbone of exports until the 1980s. The coconut industry has also been responsible for a good deal of the value-adding activity that has arisen from agricultural production. Apart from copra, derivatives of coconut such as coconut oil, desiccated coconut, coconut cream and copra meal have become exports in a number of countries. Coconuts have also been exported in their raw form. There remains, nevertheless, a conviction by some observers (e.g., Etherington 1990) that potential value-adding processes in the coconut industry have not been fully explored.

Traditionally, copra prices have been volatile, but they have been exhibiting a downward trend at around 0.25 per cent per annum over the better part of the past two decades. Volatility in c.i.f. prices appears not to be increasing. Nevertheless, fluctuations have been quite substantial, with two periods of exceptionally high world price instability between 1960 and 1987: 1973–80 and 1983–86. World price instability appears to occur in a cyclical fashion.

The high degree of vegetable oil interchangeability means that the expansion in the world market of other oils (notably palm oil) or seasonally high levels of production of traditionally important oils (e.g., soybeans) quickly pushes down prices of copra and coconut oil exports (Burgess 1990).

Many Pacific island countries have instituted coconut rehabilitation schemes over the past two decades, and they are still being contemplated in others (e.g., 'Akolo, Chapter 12). Plantations have been run down because little replanting and new planting had taken place since the onset of the second world war. The schemes have been targeted almost exclusively at smallholders who have become progressively more important export suppliers over the past fifty years.

Oil palm

Oil palm has been planted in some countries of the South Pacific since 1960, but has only been planted extensively in Papua New Guinea and Solomon Islands. The mode of production differs: Papua New Guinea production is based on land settlement schemes and nuclear estates, while in Solomon Islands all output is produced on plantations. Production for export commenced in 1972 in Papua New Guinea and 1976 in Solomon Islands. Recent trends in palm oil prices have been similar to those for copra. The campaign in the United States against

saturated vegetable fats in the late 1980s was specifically aimed at palm and coconut oils, so that their prices were even harder hit than those of other vegetable oils when the oils market softened.

Cocoa

Cocoa is produced in the South Pacific, although its history varies between countries. In Western Samoa, for example, cocoa production has been well established as a smallholder export activity for a long time. In other countries, such as Solomon Islands, the emergence of cocoa as a major smallholder export crop has been much more recent.

Cocoa prices over the study period have been more favourable than those of copra, but have displayed no significantly positive trend. Cocoa did not escape the dip in commodity prices in the mid-1980s and, since 1988–89, high levels of production in the main African exporting nations have exerted a major downward pressure on prices. There appears to have been little long-term trend in price variability. Coefficients of variation tended to increase from 1960 to the mid-1970s, with especially high values recorded in 1965 (22 per cent) and 1968 (21 per cent). Coefficients peaked at 28 per cent in 1976, and generally declined from then until 1987. There was, however, some relatively high degree of variability in 1979–80, 1982–83 and 1986.

Other export activities are fragmentary. South Pacific island exports are more remarkable for their diversity than for their homogeneity. This is particularly true of recent attempts to diversify the export base. Different nations have had varying degrees of success with a variety of commodities. In a number of instances, this diversity has been occasioned by climatic variations. More often, however, it has been a result of institutional factors that have led to the expansion of particular agricultural activities in a particular country.

International price movements have affected most of the agricultural commodities produced in the South Pacific. The turning of the terms of trade against commodity producers since the early 1980s is brought out by export figures. The general trend of high levels of production of tropical agricultural commodities relative to their demand has been evident during this period. It is likely to continue to depress prices during the first half of the 1990s even if the world economy becomes buoyant.

Country studies

This section aims to provide an overview of agricultural exporting in five South Pacific island countries: Papua New Guinea, Tonga, Solomon Islands, Western Samoa and Vanuatu. Data on individual exports during the period from 1960–88 were obtained from the data bank of the National Centre for Development Studies at the Australian National University, augmented where necessary with data from other sources, primarily national statistical publications and the South

Pacific Commission. Because it was not possible to obtain sufficiently complete series on exported quantities, the section relies on values of exports. All values have been converted into current US dollar terms for purposes of comparison, and deflated to 1975 prices using the export unit value index for all commodities (United Nations 1989).

The country studies also review the recent history and current operations of the marketing and regulatory authorities operating in each country. More complete details are given by Coulter (1991). The history and current circumstances of the authorities vary substantially, but the most common thread running through their operations is the presence of a copra marketing board which has an active participatory role. The performance of the marketing authorities varies considerably.

Papua New Guinea

Plantations producing copra and, to a lesser extent, cocoa have been part of life in the islands and coastal regions of Papua New Guinea since the early 1900s. Cash cropping by villagers in these areas has been building up gradually since the 1960s. The upswing in cocoa production, starting in the plantation sector, was evident by 1970.

Exhaustion of alluvial gold and war damage led to a temporary decline in mineral exports after the second world war. The upsurge in the prices and quantities of agricultural exports pushed their proportion of total exports up to 75 per cent in 1960 and 1970. The start-up of Bougainville Copper single-handedly established the dominance of mining exports by 1980, and agricultural exports have remained static at around 25 per cent of total exports ever since.

While cocoa and copra production led the expansion of the production of agricultural export commodities in earlier years, the entry of smallholder producers in the highlands into the production of export market crops changed the export structure dramatically after the mid-1960s. Extension efforts in Arabica coffee received an unexpectedly enthusiastic reception in the eastern part of the highlands, much to the chagrin of the Australian administration which was committed to limiting Papua New Guinea coffee production under the International Coffee Agreement (Munnall and Densley 1978). While commodity prices were generally favourable in the late 1970s, the increase in coffee production during the 1970s was spectacular and not even an outbreak of leaf rust could slow the steady expansion of coffee production, almost entirely by smallholders, throughout the 1980s.

Plantation production slowed after independence in 1975 due to political uncertainty. Cocoa was seriously affected in the late 1970s because plantations dominated cocoa production, and because of the damage caused by vascular-streak disease from 1961. Build-up of smallholder production since then has more than compensated for production lost in the plantation sector, and

replantings with hybrid cocoa have revitalized the industry in recent years (Antony, Kauzi, Loh and Anderson 1988).

When oil palm plantations began to yield in the early 1980s, the structure of Papua New Guinea agricultural exports was established for the rest of the decade. Coffee has been dominant, with cocoa a more distant second. Copra and coconut oil have been trading places with palm oil and palm kernel oil in the third and fourth positions. There are other export crops of lesser importance. Tea, on one hand, and minor crops such as pyrethrum and cardamom on the other, are grown in the lower and higher regions of the highlands, respectively, and rubber is being produced in the vicinity of Port Moresby. These crops have never accounted for more than around 10 per cent of agricultural exports.

Favourable prices for agricultural commodities in the early to mid-1980s pushed their contribution to total exports to 40 per cent. By the end of the 1980s, however, agricultural commodities constituted a mere 20 per cent of Papua New Guinea's total exports. Despite a resource base in agriculture, in absolute terms the export contribution of this sector has been stagnant since 1970. The real 1975 value of agricultural exports has been around US\$170 million since 1970. In relative terms, agriculture has been losing out to the extractive industries of mining and logging.

Commodity boards. The various colonial powers in Papua and New Guinea all pursued the objective of encouraging the production of cash crops by the local population, in order to change the subsistence economy to a more commercially-oriented system. Market regulations of differing degrees of severity and paternalism were employed to that effect, and regulatory powers have become concentrated in the hands of commodity boards. The following material draws mainly on work undertaken by Coulter (1991).

Cocoa Board. Regulation of the cocoa market started in the mid-1920s, primarily to encourage production by way of bounties and duty-free access to Australia. A formal regulatory body was established for cocoa in 1974 to administer Papua New Guinea's obligations under the International Cocoa Agreement and to introduce a stabilization scheme.

The present functions of the Cocoa Board are to control and regulate production, processing and marketing; stabilize prices; undertake research and development; and represent the government at the international level in the cocoa industry. These functions are described in detail in Chapter 9 by Ivarami and Yarbro.

The Cocoa Board has the power to collect stabilization levies and pay bounties. It also collects a levy for the maintenance of the Cocoa and Coconut Research Institute. Downturn in the industry in the late 1980s, caused by substantial increases in world production, led to the exhaustion of the stabilization fund in 1989. Subsequently, the government stepped in to provide finance for continued assistance (Gimbol, Chapter 11).

The maintenance and improvement of quality has been the cornerstone of the Cocoa Board's operations. Cocoa beans are purchased from producers by private dealers who are licensed by the Board. Fermentaries are also licensed by the Board in an effort to maintain quality standards, and dealing in dry bean is prohibited to ensure that only licensed fermentaries process cocoa. The Cocoa Board carries out regular supervision of fermentaries through its inspectors. It also approves export contracts, but the trade itself is conducted by private firms.

The Board is widely regarded as an institution that has been beneficial to the operations of the cocoa industry in Papua New Guinea.

Coffee Industry Board. Arabica coffee became the most important agricultural export commodity in Papua New Guinea following its quick expansion in the 1960s. The Papua New Guinea Coffee Marketing Board was created in 1964 by legislation primarily to assist the growers, many of them smallholders, with commercial production. In 1976, its name was changed to the Coffee Industry Board (CIB).

The functions of CIB are similar to those of the Cocoa Board. Although it is also empowered under its charter to get involved in the physical trade of coffee, it has not done so, and has remained a regulatory body. Trading at all levels has been left to the private sector. The CIB licenses exporters but not roadside buyers (apart from reserving this level of trade to Papua New Guinea nationals).

The CIB undertakes a price stabilization function, which entails the power to set prices, collect levies and dispense bounties. Research levies are paid by all producers to maintain the activities of the Coffee Research Institute. The CIB has also carried out stockholding functions as part of its responsibilities under the International Coffee Agreement.

In exercising control over the quality of the crop, the CIB has the powers to prohibit the purchase and sale of coffee that does not meet required standards. This regulatory practice appears to have served the coffee industry and the country reasonably well. Difficulties have been experienced by the industry and CIB since 1989 (near exhaustion of the stabilization fund and accumulating stocks), caused by too much coffee on the world market, rather than by a fault in the institutional arrangements for the regulation of the industry. However, some shortcomings have been identified in the CIB and changes have recently been made to its name and structure (see Chapter 1).

Copra Marketing Board. Copra was Papua New Guinea's first and foremost export until the 1970s. Regulation has been present in the industry since 1900, when the purchase of whole coconuts from the indigenous population was banned by the Germans to encourage copra production. Various schemes with the same objective were introduced during colonial times in Papua and New Guinea. Initial attempts, with legislative backing, to control the copra industry began in 1940. The Copra Marketing Board (CMB) was established in 1954, with legislative changes in 1974, 1983 and 1986.

The terms of reference for CMB are:

- acquisition of copra;
- price setting;
- sale of copra;
- physical marketing operations in the copra trade;
- price stabilization;
- licensing of exporters; and
- research and development.

Unlike the cocoa and coffee boards, the copra board is actively involved in the copra trade. It is a monopoly trader in that copra can only be sold to one of its nine depots, although copra can be collected by private traders from the producers.

The CMB collects stabilization and research levies from producers and pays stabilization bounties. Research levies contribute to the operations of the Cocoa and Coconut Research Institute. Strong competition in the international market of vegetable oils has led to a steady decline in the copra industry since the 1970s. The stabilization funds of the CMB were first exhausted in 1982 and, apart from the short-lived boom of 1983–84, the Board has relied on government loans to provide payments to producers (Bae and Coulter, Chapter 10). In effect, stabilization has turned into price support (Manning 1987).

Livingstone (1989:114) found that the monopoly marketing powers of the CMB did not result in the kind of excesses often observed in the case of similar authorities elsewhere in the developing world. This point is taken up in detail by Bae and Coulter in Chapter 10.

Oil palm. There is no statutory marketing or regulatory authority in the oil palm industry. Because of the nature of the product, only the oil mills purchase the fruit of the oil palm. They are, in fact, natural monopsonists in their regions. Price stabilization is managed by Price Waterhouse, on behalf of the Oil Palm Industry Stabilization Fund Board of Management, made up of representatives of smallholder producers and the government.¹ Separate stabilization funds are maintained for each oil palm scheme, and the agents are empowered to collect levies and pay bounties (Rambe and Lagap 1987). A research levy is collected from all producers to pay for the operations of the Papua New Guinea Oil Palm Research Association.

Solomon Islands

The traditional cash crop of copra dominated exports from Solomon Islands up to 1970 (Solomon Islands 1979). Exports commenced in the late 19th century, and rose to 22,673 tonnes by 1922. A pre-war maximum of 25,745 tonnes were exported in 1936–37, but premature nut fall and low copra prices depressed output in the second half of the 1930s and early 1940s. Further, exports ground to a halt during the second world war and many plantations were abandoned

1 Estates have opted not to take part in the stabilization scheme.

between 1942 and 1945. Production commenced again soon after hostilities ceased, and increased steadily to 26,611 tonnes by 1971, finally surpassing the pre-war maximum. By this time, however, copra accounted for only around half the total value of exports, in contrast to its predominant position prior to the 1970s. As late as 1969 it accounted for as much as 80 per cent of exports. The real value of copra exports declined during the 1980s, averaging around 8 per cent during 1986–88. Copra exports boomed in 1984 and 1985 with the high world prices, but this boom was short-lived. The devastation caused by cyclone Namu in 1986 is evident in the subsequent reduction of copra and other agricultural exports, apart from cocoa. Because of the long maturation periods for tropical tree crops, the full recovery of these industries will take many years.

Timber exports first challenged the supremacy of copra in the early 1970s. Fish and palm oil exports also increased in importance during the 1970s. By the end of the decade copra, timber and fish each provided around one-quarter of exports with close to one-fifth coming from palm oil. Palm oil has been the third most important commodity after fish and timber since 1980. Fresh and frozen fish exports overtook copra by 1980, and constituted almost half of all exports in 1988. The fish cannery provided a major source of value-adding to exported commodities. These exports had a momentary hitch in 1982, but have continued at around their previous level since that year. Cocoa exports commenced in the early 1960s, and have expanded steadily since. Exports reached US\$4.8 million in 1987, but declined to US\$3.6 million in 1988.

In real terms, the total value of exports rose dramatically between 1960 and 1980, but has since stagnated. The value of agricultural exports remained static at the 1960 level of US\$10 million (1975 values) throughout the study period, except for the boom years of 1984–85.

Commodities Export Marketing Authority. The Commodities Export Marketing Authority (CEMA) was established in 1985. Its predecessor was the Copra Board, a monopoly marketing body set up in 1954. The Commonwealth Fund for Technical Cooperation financed a study of the Copra Board in 1981 (Abeyasinghe 1981) on which the following summary is based.

The objective of the Copra Board was to assist smallholders who were unable to market their produce. The Board was to negotiate the best possible terms for the sale of smallholder produce, carry out quality control, and be involved in physical marketing operations. Its power was based on its monopoly rights in the Solomon Islands copra trade. It determined prices, carried out price stabilization and ran a freight equalization scheme to encourage production on outlying islands (Abeyasinghe 1981:34–6). Trading in copra was done by three licensed agents on behalf of the Copra Board (Abeyasinghe 1981:83). Abeyasinghe (1981) identified a number of problems in the Copra Board's operations. First, the decentralization of marketing services provided by the three agents was inadequate. In addition, payments were made only in Honiara, forcing sellers to travel to the capital to get their money. The price differential between the various grades (established by the Ministry of Agriculture and Lands) did not reflect the costs of producing the different grades. There was no feedback mechanism

whereby producers would be informed of the quality of their produce or reasons for its rejection, or shown ways to improve quality. Although graded at the point of purchase, all copra was then mixed and exported as average quality (Abeysinghe 1981:84).

Notwithstanding its seemingly strong position, the Copra Board had little influence over crucial stages in the marketing chain. The effects of price stabilization did not reach the primary producers and the Board had no control over the costs of wholesale operations as it relied on another statutory organization, the Port Authority, as a handling and storage agent (Abeysinghe 1981:38).

CEMA was established in 1985 to redress the shortcomings identified in the Copra Board's operations (Ilala 1989). The functions of CEMA are :

- to develop the production of charter commodities;
- to set and enforce quality standards;
- to set and stabilize prices;
- to buy and sell;
- to secure the availability of stocks for export by preventing hoarding and unhealthy competition; and
- to carry out training and research activities.

CEMA inherited the management of the freight equalization scheme from the Copra Board. However, it was decided to cease operation of this scheme in 1985. It currently operates five buying centres and twenty-five buying points throughout the islands. This relatively large number of buying posts has been made possible by recent infrastructure development under the Rural Services Project funded principally by the Asian Development Bank (ADB).

CEMA is also responsible for registering private cocoa exporters, but does not influence their activities in any way. Recently, it has become involved in the export of spices.

Tonga

Copra exports have historically dominated the Tongan export sector. Nearly 90 per cent of total exports came from copra in 1960, yet by 1970 this proportion had dropped to well below 50 per cent. The three main reasons for this decline were increased exports of non-agricultural products, increased banana exports and the fact that part of the coconut crop was processed into desiccated coconut. The production of coconut oil was well under way by 1980, and copra exports became insignificant after 1982. Coconut products were still the single most important source of exports in 1988, but their proportion declined throughout the 1980s except during the 1984 commodity price boom.

Diversification of agricultural exports started early in Tonga. Banana shipments constituted the second most important source of exports during the 1960s and early 1970s. Root crops became a permanent feature of Tongan exports in 1980. Watermelons and pumpkins were also exported during the 1980s, with mixed success. Vanilla proved a successful choice as a cash crop, with exports

starting in 1980. Fish have been exported since 1980, but only became significant after 1985.

In real terms, the value of Tonga's agricultural exports were halved from 1960 to 1970. The 'bust' in the early 1980s and the 'boom' of 1984 obscured the trend somewhat, but in 1987–88 agricultural exports amounted to a mere one-third of their 1960 value of nearly US\$7 million (1975 values).

Tonga Commodities Board. The Tonga Produce Board and the Tonga Copra Board were amalgamated under the Commodities Board Act in 1973. The primary objective of creating the Tonga Commodities Board (TCB) was to 'provide all the necessary marketing services for the agricultural produce of the Kingdom, attempting to raise the best returns to the growers'.²

TCB is much more than a straightforward marketing board. Until 1990 when a decision was made to privatize all activities not directly related to agricultural marketing ('Akolo, Chapter 12), it was a conglomerate of substantial proportions by Tongan standards, involved in a wide array of economic activities. Its Primary Produce Division ran an oil mill, soap factory, snack-food unit and chemical store in addition to marketing agricultural produce. The Construction Division was involved in field construction and the manufacture of building blocks and ready-mix concrete. The Construction Division also operated a quarry, construction store, gravel mine, joinery, blacksmith and plumbing workshops, and garage. The Desiccated Coconut Factory constituted a third division, involved in the production of desiccated coconut and livestock feed, and the exporting of coconuts. TCB has branches in the outer islands of the Kingdom, trading copra and running construction stores.

Prior to restructuring in 1973, licences were issued to private traders, allowing them to export all primary produce except coconut products, bananas and vanilla. The monopoly powers over the latter commodities previously vested in the Copra Board were retained by TCB. The Commodities Board was also responsible for the administration of the Copra Stabilization Fund, but by 1985, when the fund was merged with the Board's main account, it was exhausted. Still, TCB continued to pay out substantial subsidies to copra producers which amounted to T\$1.8 million above its legal obligations. Banana growers were similarly subsidized after the phasing-out of the New Zealand-financed subsidy scheme.

TCB's Desiccated Coconut Factory has been plagued by design problems, regular shutdowns, sub-standard quality and labour problems. It appears that the factory cannot be made an economic proposition. The exact financial position of the Construction Division was impossible to elicit due to loose accounting standards. TCB seems to have been constrained in its operations by an over-sized Board of Directors, comprising political appointees accustomed to a bureaucratic style of management.

2 See Chapter 12 by 'Akolo for a detailed account of the plans for privatization of certain activities of the Commodities Board.

When the decision was made to privatize all activities of TCB not directly related to agricultural marketing, five independent subsidiaries were proposed with shares eventually to be sold to private investors ('Akolo, Chapter 12). Meanwhile, the slimmed-down Commodities Board would concentrate on the export marketing of agricultural products, and expand processing to add value within Tonga. The revitalization and restructuring of coconut production, processing and export would be an integral part of the scheme.

Vanuatu

Vanuatu is the only Pacific island country which continues to have a substantial dependence on copra exports. Although well down on the proportion of more than 80 per cent in 1960, in 1988 copra accounted for close to half of all exports. Contributions in 1986 and 1987 were especially low because of the cyclone damage.

Copra exports reached almost 12,000 tonnes by 1930 and were still around this level immediately after the second world war. They trebled to just over 35,000 tonnes in 1959 (Vanuatu 1984:15). Most copra came from the plantation sector in the early part of the 20th century, but one-sixth of production was already coming from smallholders by 1930 (Fowler 1986:3) rising to more than three-quarters of copra exports by the 1980s.

Cocoa was also an important early plantation export crop. Exports approached 2,000 tonnes in some years during the 1930s, but volumes in the post-war years have been about one-quarter to one-half those levels. It nevertheless remained second in importance after copra until 1980.

Although beef has been a fairly recent export industry, beef production has been long-established. Production commenced in the mid-19th century. It expanded slowly as an activity tied to copra production in the plantation sector. Exports of beef and veal commenced in the early 1960s, and overtook cocoa by 1981. During this period beef became an activity in its own right and smallholder production has increased in relative importance, from 6 per cent in 1962 to 32 per cent in 1983 (Rees-Jones 1987).

A small niche market has been established by exporting kava as a beverage and for pharmaceutical purposes; however, exports remained at minuscule proportions by 1988.

The real value of Vanuatu agricultural exports generally fluctuated around the level of 1960 (US\$10 million (1975 values)) throughout the 1970s and 1980s.

Vanuatu Commodities Marketing Board. Of the five Pacific island countries covered in this study, agricultural marketing authorities developed most recently in Vanuatu. The Vanuatu Commodities Marketing Board (VCMB) was given responsibility for copra exports through an Act of Parliament in 1981 and began trading in 1982, following fifteen months of preparation aided by a United Nations Development Program-funded project (Nganga 1982). It was initially financed by a VT400 million reserve fund established through the EC Stabex arrangements (Vanuatu 1987). Prior to the establishment of VCMB, commodity

export marketing was undertaken by two large corporations (Burns Philp Ltd and Ballande (CFNH)), some cooperatives and a few small trading firms.

Since its inauguration, VCMB has had two more commodities added to its responsibilities. Cocoa was added as a prescribed commodity in 1984, and kava in 1987. While cocoa was another traditional export commodity like copra, the kava market was relatively new when the VCMB became responsible for it.

The aims of the VCMB, and major reasons for its creation, are:

1. To ensure 'orderly and efficient marketing' of prescribed commodities.
2. Provide producers with fair and stable prices.
3. Improve the quality of export commodities.
4. Help the government achieve its aims of diversifying agricultural production and exports.
5. Contribute to the government's goal of balanced regional development.
6. Encourage producers to develop a better understanding of existing export marketing networks and methods (Vanuatu 1987:83-4).

Copra. VCMB began operations as a copra exporter in 1982 with relatively modest resources: headquarters in Port Vila, an office in Luganville and a staff of ten. This restricted the scope of operations, requiring it to appoint agents to receive and store copra on its behalf (Nganga 1982). It has since been able to expand its operations but, with minor exceptions, continues to market through traders for all commodities.

VCMB has four major functions in copra exporting: trading operations, pricing, quality control, and information services. Trading operations are principally directed towards the achievement of so-called 'orderly and efficient' marketing of prescribed export commodities. This is a common goal of governments, but unfortunately one that they generally fail to define carefully. In Australia, it has been a common catch-phrase that is now largely discredited, being associated principally with inefficiency.

The fourth goal listed above is also meant to be facilitated by the trading operations of the VCMB. The Board has also been assigned an entrepreneurial role of breaking into new markets for export crops and developing markets for existing commodities through value-adding processes. This would presumably mean that a strong market research program should be in place, but such a program is not evident (Chapter 7).

The pricing function of the VCMB can be categorized into three types: price stabilization, price support, and the operation of a national copra transport subsidy scheme. While all three mechanisms are aimed at improving prices paid to producers, expected end results—and costs—are different. Price stabilization and the transport subsidy scheme have significant administrative costs whereas the administration costs of price subsidies when prices are low are quite small. All are likely to have resource misallocation costs. Price stabilization distorts signals to producers by encouraging more production than economic conditions

dictate when prices are low and less production than conditions dictate when prices are high. Price support encourages some people to stay in copra production beyond the point where it is profitable to do so. The transport subsidy scheme encourages more production in regions that are less profitable, and discourages production in regions where production is more profitable.

Some potential advantages have to be weighed against these costs. Price stabilization is alleged to help in macroeconomic stabilization, increase smallholder producers' utility by reducing the price risks they face, encourage saving and productive investment in the copra industry, and help to maintain infrastructure in remote areas (see Chapters 14 and 6 for a detailed discussion of these issues). Price support is meant to provide welfare gains to poor smallholder producers and encourage the maintenance of coconut plantations in times of low commodity prices. The former was considered the most important benefit when the stabilization scheme was established (Nganga 1982:58). The transport subsidy scheme is intended to help in the attainment of goal (5) above by helping to reduce regional disparities in income-earning capacity.

Regarding the quality control function (3), Fowler stressed the point that increasing the quality of copra has been given a high priority because of Vanuatu's record as a producer of poor quality exports (Nganga 1982). The quality issue came to a head in 1981 when Vanuatu copra became unacceptable to the world market (Nganga 1982). A copra improvement project was implemented in the early 1980s, comprising an extension campaign and the provision of subsidized building materials to improve copra drying (Fullerton 1982). The project was managed by VCMB, which worked in close cooperation with the Department of Agriculture, Livestock and Forestry. Pricing instruments are also used to improve copra quality. These include a price premium for hot air-dried copra over smoked copra, and penalties for excess moisture content in the dried copra.

Finally, VCMB performs a role as a provider of information, particularly to producers, about the copra marketing system. Projects featuring the distribution of posters and other educational material are the main means of implementing this function (Vanuatu 1987:85).

Cocoa. VCMB has a more limited role to play in cocoa than in copra, but its presence still dominates in the cocoa export industry. The main differences are the absence of price stabilization and transport subsidy schemes. Otherwise, similar trading, pricing, quality control and information functions are discharged. VCMB is a price-taker in the cocoa export market.

Considerable effort has recently been put into improving cocoa quality. Projects to improve storage and processing facilities were included in the second national development plan (Vanuatu 1987:85). Cocoa grading was first introduced in 1984 on an 'export' and 'reject' quality basis. It has since been expanded to three grades based on bean size, mould, salt content and other defects (Vanuatu 1987:83).

Kava. The functions of VCMB in kava marketing differ from those for copra and cocoa in two ways. First, the promotional role is more important in kava, given that it is a relatively new export industry. Second, price negotiations in the export market are more important than for either copra or cocoa and VCMB has a greater ability to influence price.

Unfortunately, it is difficult to make any assessment of the performance of VCMB since its inception because of a lack of studies. However, an independent evaluation of its performance could be very valuable because the recent commencement of its operations should enable comparisons to be drawn with the performance of the private marketers of copra prior to April 1982, cocoa prior to November 1984, and kava prior to April 1987. Areas of particular concern in assessment would be changes in marketing margins, changes in c.i.f. and f.o.b. price spreads, changes in price variability at producer level relative to c.i.f. level, impacts of quality improvements in terms of net benefits to producers, and the impact of the transport subsidy scheme on copra supply response. Some attempt is made by Fleming and Antony in Chapter 3 to compare copra marketing margins before and after the commencement of operations by VCMB.

Western Samoa

German-established plantations provided the bulk of agricultural exports from Western Samoa from the nineteenth century until recently. Copra making was developed in Western Samoa to provide a more storable product than the previously-traded coconut oil (Hunter 1985). Even until the early 1980s, copra constituted around half of Western Samoa's exports. Processing of coconuts into coconut oil reduced copra exports by the mid-1980s, although problems in the milling industry have seen copra's re-emergence in significant proportions in 1985, 1986 and 1988. Nevertheless, coconut oil has been the major export since 1982.

Cocoa was introduced by the Germans in the nineteenth century. It was taken up by villagers throughout the nation, and remained the second most important export commodity after coconuts until the 1980s.

Expatriate Samoans created a market for taro in the early 1970s. Exports of the commodity have provided an opportunity for diversification since then, and it was the second most important export crop after copra/coconut oil during the 1980s.

In real terms, the value of Western Samoa's exports has declined since 1960. Apart from the fluctuations of the early and mid-1980s, agricultural exports amounted to half their 1960 value of US\$12 million (1975 values) throughout the 1980s.

Commodity boards. Agricultural production in Western Samoa can broadly be divided between semi-subsistence village farmers and commercial plantations. A feature of the commercial plantation sector since independence has been the Western Samoa Trust Estates Corporation (WSTEC), a fully government-owned company until 1990, involved in plantation agriculture.

Commodity boards existed until recently for the most important export commodities, and the domestic pricing and marketing of these commodities were closely controlled. Both smallholders and plantations were compelled to sell their produce destined for export to the boards, or licensed traders acting on behalf of the boards, at set prices. As the only exception, export crops produced by WSTEC were traditionally exported direct rather than through the respective marketing boards.

Cocoa Board. Up to the early 1980s, cocoa was the second most important export commodity in Western Samoa. Since then, it has been relegated to third place behind taro. Prior to 1972, licensed private traders exported Western Samoa's cocoa. The Cocoa Board was established in 1972 by an Act of Parliament. Its duties until 1990 included the setting and stabilization of prices, and the purchase and marketing of cocoa destined for the export market. There is also a large unregulated domestic market for *koko Samoa*. The Board enjoyed monopoly powers over Western Samoan cocoa exports, except for the production by WSTEC.

Apart from its responsibility for the procurement and export of the crop, the Cocoa Board set prices at the various stages in the marketing chain. It operated two main buying depots, at Salelologa on Savai'i and Vaitele on Upolu. The latter also undertook reconditioning of poor-quality cocoa. The Board also undertook the final packaging for export. Private traders were allowed to carry out domestic marketing on behalf of the Board, mainly purchasing from smallholders. Fermentation and processing was done by the producers or middlemen. Large plantations dealt directly with the Cocoa Board (Opio 1984).

Price fixing was based on a stated f.o.b. price, from which 25 per cent was deducted for administrative costs. The floor and ceiling prices for producers were based on a five-year average of the f.o.b. price, and actual earnings for the preceding four years (Asian Development Bank 1985:170).

Opio estimated that while shipping and insurance constituted a WS\$100/tonne share of the c.i.f. price of WS\$1700/tonne in the early 1980s, domestic marketing costs amounted to WS\$600/tonne. Some 60–65 per cent of the f.o.b. price was supposed to go to farmers on the basis of the official price structure but there are indications that some small growers received less than 50 per cent, due to some traders not paying the gazetted prices.

An Asian Development Bank team (1985:168–70) found that the notional f.o.b. price determined by the Board was below the actual price, and that the 25 per cent administrative margin charged by the Cocoa Board compared unfavourably with WSTEC's selling margin of 5 per cent. The team was critical of the Board's practice of quality control. There was no differentiation between grades in buying cocoa, which discouraged village producers from improving their rather low standards of processing, particularly fermentation (Ivarami and Yarbrow, Chapter 9).

The Bank proposed the abolition of the Cocoa Board and of monopoly export marketing in cocoa (Asian Development Bank 1985:164–70). A single marketing

organization for export commodities was recommended to assume the Board's functions. The government of Western Samoa reported that legislation was being prepared to institute the suggested changes (Western Samoa 1988) but, recently, events have overtaken this reorganization and the Cocoa Board ceased to exist in 1990.

Copra Board. Copra and coconut oil have been the most important export commodities in Western Samoa. The Western Samoa Copra Board was created under the Copra Board Ordinance in 1948. Until 1990, its main purpose was to conduct the export of copra from Western Samoa under monopoly powers as well as license private traders if deemed necessary. This board operated a reserve fund to stabilize internal prices, and had the power to set prices at various stages of the marketing chain (Fernando, Asghar and Opio 1984). The Treasury, however, was responsible for the distribution of Stabex funds to copra producers. As for cocoa, the Copra Board operated two main buying depots. It was responsible for quality control, but could not promulgate any regulations to support its responsibility.

The Department of Agriculture, Forests and Fisheries carries out some of the functions for which, in similar situations in the South Pacific, the marketing boards are responsible. Foremost among these are quality control and the licensing of private traders doing the domestic buying on behalf of the Copra Board.

Fernando, Asghar and Opio quoted a study by Traill (1983) which concluded that the great number of marketing stages in Western Samoan copra trade causes domestic marketing costs to be rather high. This is confirmed by Fleming and Antony (Chapter 3).

The Asian Development Bank study (1985:165–68) revealed a number of inconsistencies in pricing by the Copra Board. The f.o.b. prices for 1979–82 were well below those calculated from Rotterdam c.i.f. prices. Although the Board paid farmers on the basis of WS\$639/tonne f.o.b. in 1984, it sold copra to the oil mill at WS\$1017/tonne. In addition, the margin for the Board's administrative expenses was estimated by the Bank team to be around 15 per cent. Given that 'the Board takes minimal risks in its transactions', this 'is considered excessive' (Asian Development Bank 1985:166). Nor did the Copra Board pass any of the benefits of the 1984 devaluation of the Western Samoan tala to the producers. The Board estimated that producers received some 70 per cent of the f.o.b. price, while the Asian Development Bank's calculation indicated 56 per cent.

While the pricing formula of the Board for price stabilization was deemed suitable to meet the objectives of price stabilization (Asian Development Bank 1985:165), it would be seriously handicapped if the f.o.b. price on which it is based was not realistic. Subsequent to the ADB's report, a large loss of Board funds was reported, and the Secretary of the Board left the country.

The Asian Development Bank recommended that the Copra Board be scrapped and its duties in regulation and supervision handed over to a single body responsible for export marketing of all commodities. It was suggested that

the price stabilization function be taken over by Treasury and the Central Bank. However, three years later Western Samoa could report little progress (Western Samoa 1988:55). More recently (1990), the government indeed did move to dissolve the Copra Board, at the instigation of the ADB, which made this move one of the conditions of the Program Loan.

Produce Marketing Division. The Produce Marketing Division (PMD) of the Department of Agriculture, Forests and Fisheries commenced operations soon after the end of the second world war. It went through several reorganizations, but existed in the same form between 1983 and 1990. It was responsible for the marketing of fresh produce such as bananas, taro and kava. The physical operations of PMD comprised purchase of the produce, inspection, packaging and shipment. It also had the power to license exporters. PMD allocated shipping capacity going to New Zealand, thus effectively controlling what could be exported to that important market.

The Asian Development Bank (1985:173) termed the pricing policy of PMD, which was essentially an incentive margin on an estimation of farmers' costs, 'subjective and arbitrary'. It is apparent from PMD and total export figures that an overwhelming portion of licensed exports of taro and kava in recent years occurred through private trade. PMD has not shared to any significant extent in expanded export markets for these commodities. The government moved to cease operations of PMD along with the Cocoa and Copra Boards in 1990.

Banana Board. In 1961, bananas constituted around one-third of Western Samoa's exports. Due to cyclone damage, disease and increased competition by low-cost suppliers, banana exports had all but disappeared by the mid-1980s. The Banana Board was responsible for the export of bananas, as part of the operations of the Produce Marketing Division. Over the years, the importance of the Banana Board diminished and, in the 1980s, it became practically non-operational.

General observations

Cursory observation could lead to the conclusion that the South Pacific follows the general trend of the declining importance of agriculture with economic development. The relative reduction in the value of agricultural exports could indeed be interpreted as an indication of economic development—if they had been replaced by high value-adding exports from other sectors. This is not the case, however. Royalties from mining, logging and fishing, the areas of fastest development in South Pacific export sectors during the 1980s, merely create the illusion of affluence and development. Mining is extractive by nature, and fishing and logging have often been treated as such by the companies that were granted licences in the South Pacific. Mining and fishing, especially, are enclave industries that offer little help in addressing the problems of population growth,

increasing urban unemployment and growing disparities between rural and urban incomes. Given the types of skills and levels of education of South Pacific islanders, especially the rural population, the agricultural sector is the only substantial source of employment in the short- to medium-term. The production options in agriculture are traditional export tree crops, existing food crops, and new crops currently being tried or still to be introduced.

Traditional Pacific island agricultural export commodities do not look very encouraging at the moment. Yet governments consider these industries indispensable, and regard as imperative the need to keep them afloat through improvements in efficiency. There has been some success in the export of traditional foods such as bananas and root crops. While the former has a wide appeal, it is another highly competitive internationally-traded agricultural commodity with stringent post-harvest and marketing requirements that are difficult to meet. Pacific island countries have a comparative advantage in root crops, but thus far the market has been limited mainly to expatriate Pacific islanders. Vanuatu's kava trade is an interesting example of using a traditional crop in a new way. Western Samoa's exports of kava may grow in a similar way. The cases of watermelons, vanilla and pumpkins in Tonga indicate that there is scope for the export of new crops, but there are also many pitfalls in production and marketing along the way to establishing a secure niche export market.

Technological improvements have the capacity of reducing costs of production in established tree crops. Sustained agricultural research and extension effort is needed to achieve cost reductions and to produce traditional foods and introduced crops in a quality acceptable for overseas markets. Appropriate marketing of the commodities is equally important. Many export drives in the South Pacific have foundered on the lack of proper marketing (e.g. passionfruit in Western Samoa in the early 1980s). Hence, efficient marketing institutions are crucial to achieve the necessary market development.

Implications for the future

Whether the political institutions of Pacific island countries have succeeded over the past thirty years in promoting agricultural exports through market intervention is a point for debate. It is clear from the summaries presented in the country studies that some marketing boards have had considerable problems. In the third and last section of this chapter the performance of marketing authorities in the developing world over the past thirty or so years are reviewed, and the success of several authorities in Africa and Cyprus are outlined. The chapter concludes with a discussion of several questions which should be considered in evaluating the future of marketing authorities in the South Pacific.

Marketing board performance worldwide

Worldwide two types of marketing boards can be distinguished: food marketing boards and export marketing boards. In the South Pacific, the focus has been principally on the latter, although food marketing boards are an option available to governments.

The modern history of marketing authorities in agriculture began in the 1920s, and grew out of the cooperative movement. Fruit-marketing cooperatives in Canada and Australia tried to raise prices by storing the produce, but were frustrated by suppliers outside the cooperatives who reaped the benefits without bearing the costs. The cooperatives applied for government legislation to make participation mandatory.

The depression of the 1930s reinforced political pressure for the creation of marketing authorities and they were introduced for many commodities in the English-speaking world. Initially, the prime objective of intervention was price support through subsidies, regulation of marketed surplus and dual-price schemes. After the depression marketing authorities were retained, with powers intact, despite eventual improvement in market conditions for agricultural producers.

Agricultural marketing authorities were introduced into the colonies of Western powers during the second world war when normal marketing of agricultural products was disrupted to help agricultural export producers survive the sudden loss of their markets by buying and stockpiling their produce. The organizational structure of marketing authorities was popular with postwar administrations in the colonies, as well as with new governments after independence, for similar reasons for its popularity in nations such as Australia: it proved a convenient way of transferring surplus from one economic group to another without the openness to scrutiny that such transfers face when done through budgetary mechanisms.

In Australia, marketing authorities served to transfer money from consumers to agricultural producers. In newly-independent nations in the developing world, on the other hand, the transfers generally moved in the opposite direction, from agricultural producers to the state and urban consumers. These government objectives constitute the major part of a hidden agenda, which is discussed below.

Both food marketing boards and export marketing boards were popular, especially in Africa, from the 1950s until very recently. Despite their declared objectives, export marketing boards were used as a convenient way of taxing producers of export commodities, while food marketing boards served the purpose of keeping food prices low to pacify the urban population.

Marketing authorities of various kinds were meant to be seen as having other beneficial effects on society. The general theme was to remove the disadvantages faced by agricultural producers in an unregulated market. These disadvantages were purported to be:

- lack of information flow to producers;
- unequal bargaining powers between buyers and sellers of products at the farm level, leading to exploitation of producers by marketers, exacerbated by lack of articulation and enforcement of market regulations;
- inefficiencies in private trading, caused particularly by too many stages in a marketing process populated by small operators who suffered from diseconomies of small size;
- inability of the agricultural system to provide produce of sufficient and consistent quality;
- inability of the agricultural marketing system to provide promotional and research support for agricultural market development; and
- exposure of producers and the newly-independent economies to widely fluctuating prices.

The first three disadvantages of a segmented unregulated market were considered to lead to higher than warranted marketing margins claimed by private marketers through exploitation and inefficiency.

Reconsidering the role of marketing authorities

Recent trends towards the privatization of agricultural marketing in the developing world have led to a fairly general re-evaluation of the appropriate role of government in the agricultural sector in the Pacific island countries. The high expectations of the role of marketing authorities in developing countries have been largely unfulfilled.

Marketing authorities of various kinds were initially expected to have beneficial effects on society in general, and smallholders in particular. These effects were to be achieved by improving information flows to producers; preventing exploitation by private marketers of sellers of farm products; ridding marketing systems of inefficiencies in private trading; ensuring the provision of agricultural produce of sufficient and consistent quality; providing promotional and research support for agricultural market development; and reducing exposure of producers and economies to fluctuating prices.

These authorities were initially viewed favourably, but their image has been deteriorating as the beneficial effects outlined above failed to materialize. By the 1980s, they had developed a generally negative reputation, with growing realization of their poor management performance, susceptibility to corruption and the damaging impact of many of the economic policies they implemented. The record of food marketing boards has been dismal but that of export marketing boards, while not as bad, has also been poor.

Fleming and Antony (1991) have summarized the findings of studies of the performance of marketing authorities in developing nations that have accumulated over the past thirty years. The growing weight of evidence in these studies has convinced policy makers in many of these nations that the rationale for the existence of these authorities is no longer valid.

There are successful cases of export marketing authorities which are worth outlining in some detail. Abbott (1987:146–72) singles out the Kenya Tea Development Authority, Zimbabwe's Cotton Marketing Board, the Botswana Meat Commission and the Cyprus Potato Marketing Board, although he provides little empirical evidence to support his findings.

The Kenya Tea Development Authority (KTDA) effectively created the tea export industry among smallholders by providing a complete package of extension, marketing, processing and export facilitation.³ Smallholder activities have been supported by government expenditure on marketing infrastructure in the designated tea-growing areas and one of the key factors of success has been the coordination of smallholder production and marketing activities. The relative lack of government interference has allowed KTDA to follow a commercially sound and prudent line; industry returns are a function of world prices. The staff are technocrats and a clear system of personal responsibility and incentives operates within the authority (Abbott 1987:146–52).

Zimbabwe's Cotton Marketing Board was set up as a monopsonist, meaning it had sole rights to buy cotton. It also does the ginning, and markets the lint and seed. There is a strict system of licensing producers, and large producers are given delivery quotas. Similar to the KTDA, the Cotton Marketing Board has played a major role in coordinating production and marketing functions. The monopoly exporter, the Zimbabwe Cotton Corporation, was initially a private firm but has since been taken over by the Cotton Marketing Board. Abbott (1987:152–57) made the point that a strong emphasis on quality and consistency enabled the processed cotton output to be sold to a well-paying niche market.

The Botswana Meat Commission was created in 1956 as a government-owned vertically-integrated monopoly for the purchase, slaughter, processing and export of cattle. The Commission's buyers are the owners of general stores and private traders. Producers can contract supplies to the Commission, and are allocated a quota. Exports are increasingly processed as livestock exports have been phased out. Abbott cites the main strength of the Commission as its emphasis on hygiene standards that are indispensable for selling meat to developed countries. The expensive building and maintenance of cattle fences (to separate healthy cattle in the south from the likely introduction of diseases from the north) was done by the government. Government intervention into its business affairs has been rare, and the organization is being run on a commercial basis (Abbott 1987:157–65). Abbott's only criticism of the operations of the Commission is that it tends to help those better-off producers who are more able than others to satisfy its requirements.

Finally, the Cyprus Potato Marketing Board (Abbott 1987:165–72) is a monopoly exporter that controls production through seed distribution and undertakes the marketing functions of packaging, advertising and price stabilization. Abbott attributes its success to the dedication of management,

3 The approach is similar to that of the Fiji Sugar Corporation.

meticulously correct business practices, its success in creating a differentiated product of consistent quality, and its monopoly to sell 'Cyprus potatoes' to best advantage. It is a small organization that imposes only a narrow margin on the produce.

Implications for the future role of marketing authorities in the South Pacific

Generally, six goals of agricultural market intervention through marketing authorities are made explicit in the regulations relating to their establishment, and are aimed at assisting, and protecting, small producers:

- keeping marketing margins as low as possible to ensure remunerative prices to producers and international competitiveness;
- supplying produce of consistent quality and appropriate grades;
- stabilizing commodity exports;
- achieving any advantages of economies of size;
- regulating markets to prevent improper behaviour and loss of marketing reputation; and
- undertaking the research role, which is insufficiently fulfilled by others in the marketing system.

Three other goals are more often part of a hidden agenda of governments in setting up marketing authorities:

- providing cheap food to urban dwellers;
- collecting an agricultural surplus from farmers who are outside the taxation system, and transferring it to the state; and
- meeting other supposedly social goals such as the provision of employment within the marketing authorities.

The issue of meeting social goals is a vexed one because it is frequently used as an excuse to follow courses of action not in the interests of society but to satisfy certain sectional interests.

The above review raises three pertinent questions for analysis of the future role of marketing authorities in the South Pacific.

Are there region-specific factors which enable marketing authorities in the South Pacific to avoid the shortcomings in performance which are virtually endemic in the rest of the developing world?

One of the crucial issues is whether marketing authorities in the South Pacific are constrained in their performance by a hidden agenda imposed upon them by governments. There is clearly a potential conflict between the explicit goals and the hidden agenda: the former are aimed at increasing the welfare of small producers while the latter usually reduce the welfare of these producers in developing nations.

The only way to reconcile these two sets of conflicting objectives is to achieve a lowering of marketing margins. This lowering of marketing margins can be achieved by reducing profits from marketing, reducing marketing costs, or both.

On the other hand, the pursuit of social goals can bring about increases in marketing margins by allowing inefficiencies in marketing operations that raise costs. The success of marketing authorities can be judged partly on their ability to reduce marketing margins. Evidence on marketing margins in the South Pacific is reviewed by Fleming and Antony (Chapter 3) and Smith (Chapter 8).

To a considerable degree, marketing authorities in the developing world have been effective in achieving their hidden agenda items. In particular, there is substantial evidence that they have effectively transferred producers' surplus to both the state and urban consumers. But these outcomes have often been achieved at great cost, principally a reduction in the rate of agricultural and rural development. Reduced incentives to what is often the largest economic group in the nation have also had adverse long-term effects on national development. While transfers to the state might have helped raise government revenue, low urban prices have often required the state to make deficiency payments which have become an open-ended drain on the government budget.

It is conceivable that the pursuit of hidden agenda items may not have been as strong in the South Pacific as it has been in the rest of the developing world, with perhaps the exception of meeting social goals. However, it would be a mistake to think that the pursuit of a hidden agenda is the only factor that has caused poor marketing performance by marketing authorities in developing nations outside the South Pacific.

Which export marketing roles are best performed by marketing authorities in the agricultural export sectors of the South Pacific?

The answer to this question is unlikely to be clear-cut, as there are various types of government intervention in agricultural marketing, and various types of public institutions that can perform the tasks imposed by government intervention. For example, government can create cooperative or group marketing organizations to participate in agricultural markets rather than rely on marketing authorities. It can also participate through joint ventures with private marketers. To achieve facilitation and regulation, it can rely on marketing authorities or give responsibility to government departments or other statutory authorities.

Available evidence presented above, although patchy, indicates that marketing authorities have the potential to fulfil valuable roles in some areas of marketing in the developing world. Success has been associated with clearly-defined responsibilities, autonomy in operations, good marketing management and a favourable regulatory environment. Too often, however, these roles have been diluted by additional demands. The few success stories that do exist beg the question: is it necessary to establish marketing authorities to fulfil these functions, or can they be achieved more effectively and more cheaply by other institutions?

Abbott (1987) presented two alternatives to monopolies in export marketing. The first is to allow individual exports with controls (e.g., licensing, contract

monitoring) by the central bank. The second is to establish a joint venture with a multinational company that would guarantee market access through established brands and central controls. Presumably, the latter would also take care of quality, but its acceptability may be limited by political factors. The former, on the other hand, presupposes the existence of viable trading companies and independent legal checks on them. If not, they may damage the country's image through indifferent quality, political abuse and competition for market share.

Clearly there is not an open-and-shut case against private marketers. The experience of Papua New Guinea with export-crop marketing indicates that private marketing is feasible, and appears to be the only efficient way of collecting export commodities from individual smallholders. In cocoa and coffee smallholder production, although marketing is restricted to nationals by law, this did not prevent the build-up of a stratum of small entrepreneurs operating between the smallholder producers and processors.

Jones (1984) saw some role for a marketing board in spatial and intertemporal arbitrage. The board would work alongside the private trade and its purpose would be to stabilize prices by reallocating stocks of the commodity while, in the process, making profits. Working through agents, it could obtain local market information. Its operation could improve general information flow, thereby improving the efficiency of the private marketing sector. Jones realized, however, that the main problem facing existing marketing boards is that they are mostly incapable of marketing in the commercial sense.

Lele (1981) emphasized the need to remove monopolistic structures first, whether these are replaced by cooperatives, private trade or a public institution. She examined the record of cooperatives, the organizational form for both production and marketing often suggested for rural development in developing nations. Cooperative marketing in agricultural sectors does not have a good reputation and has recently been called group marketing to avoid the stigma associated with cooperative ventures. Marketing cooperatives have not been a panacea. Their track record is varied, with failures attributable to both the regulatory environment and their own ineptitude. Private traders, according to Lele, are said to have lower overheads and charge lower margins.

The pendulum seems to have swung away from the concept and practice of omnipotent governments. One manifestation of this is the divestment of government marketing powers in agriculture (Reusse 1987). There is a potential, however, for the disbanding of existing marketing authorities to be done in a way that is harmful to the interests of farmers and the economies of the nations involved.

Following the widespread failure of parastatal marketing organizations the advice currently on the desks of many African governments is to liberalize trade and allow greater freedom of operation of the private sector. Shepherd (1989) felt parastatals have some role to play in marketing, but on a basis different from that typically taken so far in developing nations. He argued that parastatals should only engage in selective intervention for price smoothing, not price

fixing, and that pan-territorial and pan-seasonal pricing should be abandoned. His guidelines for the privatization of grain marketing in Africa entailed:

- clear policy guidelines and continuity in the regulatory framework;
- increased consultation with the commercial sector;
- removal of legal and institutional obstacles;
- revision of the mandate and finances of government marketing organizations that involves streamlining and the provision of an environment for successful future operations;
- sales of marketing authority assets so that the private sector can obtain the necessary marketing infrastructure; and
- provision of training to the private sector.

*Should consideration be given to expanding the operations of
marketing authorities to domestic food marketing?*

This issue is occasionally raised by agricultural policy makers in the South Pacific. It is raised most often when, for various reasons, domestic food prices are abnormally high. While the evidence reviewed above strongly suggests this expansion of marketing authority operations would be unwise, the arguments for and against should at least be rehearsed.

CHAPTER 3

Marketing margins of cocoa and copra exporters in South Pacific island countries

Euan Fleming and George Antony

The purpose of this chapter is to analyse and compare the marketing margins of marketing authorities and private traders in the copra and cocoa industries in Papua New Guinea, Tonga, Solomon Islands, Western Samoa, Vanuatu and Kiribati. Most of the analysis of the marketing margins of private traders is focused on the cocoa industry in Papua New Guinea and Solomon Islands, while the margins of six copra and one cocoa exporting authority are studied. The various estimates are compared, and attempts made to explain any differences between margins. The relations between f.o.b. export and producer prices are also estimated and analysed. The results shown in this chapter are not clear-cut. Some private marketers and some marketing authorities operate with reasonable margins. There is, however, no general evidence that private margins are higher than marketing authority margins. Also fears of the exploitative nature of private marketers seem to be unjustified.

Definition

A marketing margin is defined as the price charged by a marketer for the provision of specified marketing services. It is equivalent to the difference between the price at which the marketer sells the product and the price paid for the product before the provision of those services. Exporters may buy directly from the producers of agricultural commodity exports. But more often they buy from other traders, who may themselves buy from traders operating closer to the producers in the marketing system. Margins for the operations of traders (who often carry out processing activities such as copra drying and cocoa

fermentation) are difficult to measure, because reliable and comprehensive data on their operations are scarce. The margins of exporters are usually more amenable to measurement because data on them are commonly available.

Purpose of marketing margin analysis _____

The purpose of measuring marketing margins is to gauge commodity marketers' performance. While it is asking too much of a simple criterion such as marketing margin to obtain a full and accurate picture of marketing performance, it is a useful tool when combined with other information on the activities of marketers. Commonly there are two uses of marketing margin measures. One is to gauge how efficiently marketers are operating, in terms of keeping their costs per unit of throughput low, and the second is to measure competition among marketers and the extent to which they can use discretionary pricing to earn abnormally high profits.

Shortcomings of marketing margin analysis _____

The main shortcoming in using marketing margins to gauge agricultural marketing performance is the problem of defining a norm against which to measure performance. Whichever norm is chosen is most probably subjective, and will vary according to who is measuring performance and the circumstances and conditions under which the marketing activities are undertaken.

A second shortcoming is that the price of marketing services can encompass a variety of activities. Marketing services can differ from one organization to another in terms of the quantity of services provided, the quality with which they are delivered, and the technology used in their provision. Further, the nature of the marketing process affects marketing margins, and can lead to an unfair picture of the efficiency and competitiveness of individual marketing firms. This is especially important in the South Pacific where, for example, marketing infrastructure (especially transport, communication, handling and storage) may have enormous regional variation. Also, ancillary services available to marketers from other institutions can vary greatly by region and commodity.

Third, care must be taken in interpreting marketing margins. The choice of a particular period (usually dictated by data availability) can be misleading if it covers a period in which there is substantial price levelling by marketers. Other difficulties include removal of the effects of changes in stabilization funds, accounting for grants given (or taxes imposed) on marketers, and treatment of chronic deficits incurred by marketing authorities which enable them to reduce

margins below what would be possible for a private marketing organization concerned with maintaining long-term financial viability.

Finally, marketing margin analyses, including those reported below, are usually done with a narrow focus, typically on the marketing of one commodity. Yet, some marketing organizations are involved in marketing many commodities. In these cases, allocating indirect costs and accounting for cross-subsidization among commodities being traded can be very difficult and can make results of analyses misleading.

These four deficiencies in marketing margin analysis highlight the need for care in diagnosis and prescription. Marketing margins are but a first step in determining how competitive and efficient marketing firms are when operating in a particular marketing system.

Approach

Two steps are followed in the marketing margin analyses undertaken in this study. We start with estimates of margins and, where possible, interpret these in the light of what is known about the marketing processes to counter the shortcomings mentioned in the previous section. Our knowledge of the export marketing systems in the Pacific island nations for which margins have been estimated is far from sufficient and the data used for analysis are far from ideal. Hence, there is some risk of misleading diagnoses, findings and prescriptions.

The second step is to use margins to calculate prices at different stages in the marketing process. The purpose of doing this is to determine how effectively commodity prices are transmitted between marketing stages (i.e., how 'transparent' the market is). Margins are also regressed against downstream commodity prices to determine the extent to which discretionary pricing is possible among firms operating in a specified stage of the marketing process.

There are two main modes of pricing agricultural export marketing services in a competitive market. First, the margin might be set as a proportion of f.o.b. price. In this case, the elasticity of transmission of f.o.b. price to both margin and producers' price would be unity. Second, the margin might be fixed in absolute terms, and be invariant to changes in f.o.b. price. Here, the elasticity of transmission of f.o.b. price to producers' price would be greater than unity, the elasticity of transmission of f.o.b. price to margin would be zero, and the coefficient on the f.o.b. price variable would be unity (i.e. a change of \$1 in f.o.b. price would lead to a marginal change in the producers' price of \$1). Marketers may choose some combination of these two modes, in which case the elasticity of transmission of f.o.b. price to producers' price is probably (but not necessarily always) going to lie between zero and unity.

For the purposes of this study, discretionary pricing is said to exist if the responsiveness of the margin to f.o.b. price is greater than zero. In these circumstances, marketers are able to alter the prices they charge for their services in a way not possible in a competitive market in which there are parallel derived

(export level) and primary (producer or dealer level) supply functions. The point needs to be made that discretionary pricing may be due to a number of factors, and does not necessarily reflect imperfections in the marketing system.

Comparison of copra marketing margins

A comparison of marketing margins has been undertaken for the copra export marketing organizations in Papua New Guinea, Tonga, Solomon Islands, Western Samoa, Vanuatu and Kiribati. Because of the fragmentary nature of available data, the study periods for the different nations vary. This makes any comparison between organizations difficult, but some generalizations are possible. To facilitate international comparisons, marketing margins are converted to US dollars, and deflated to 1989 prices using the 'World All Commodity Export Unit Value Index' published by the United Nations (United Nations 1990). In the graphs presented for each nation, the marketing margins are shown in 1989 US dollars per tonne of copra throughput and as a percentage of the f.o.b. price.

Papua New Guinea

Figures 3.1a and 3.1b demonstrate the level of copra marketing margins in Papua New Guinea, as well as their size relative to the f.o.b. price, from 1975 to 1989. The f.o.b. price has been obtained from industry sources and from the Department of Agriculture and Livestock. The price paid to producers is calculated as the unstabilized price; that is, the payout price of the Copra Marketing Board (CMB) minus (plus) any stabilization bounty (levy). The marketing margin is obtained by subtracting the producer price from the adjusted f.o.b. price.

Figure 3.1a Copra marketing margins in Papua New Guinea, 1975-89

Figure 3.1b Copra margins and f.o.b. prices in Papua New Guinea, 1975-89

Sources: Papua New Guinea, Department of Agriculture and Livestock records on trade statistics; Copra Marketing Board, *Annual Reports*, various years.

The period covering the beginning of the data series plus 1973–74 (years for which information about stabilization payments was lacking) exhibits a see-sawing pattern. It appears that the price-setting mechanism of CMB did not work very smoothly in this period, as opposed to the period from 1979 onwards. The figures indicate considerable consistency for the latter years. The margins between f.o.b. and d.i.s. prices (which are used as a proxy for the prices paid to dealers) are quite different from those reported as CMB's administration and selling costs (Livingstone 1989:115). This discrepancy needs an explanation, but none has been forthcoming.

Solomon Islands

Marketing margins for the Commodities Export Marketing Authority (CEMA) (and, for early years in the study period, the Copra Board) are presented on an annual basis for the period 1975–87 in Figures 3.2a and 3.2b. The f.o.b. price is calculated as the funds received from exports by CEMA minus export tax payments, divided by the volume of copra exported by CEMA. The price paid to producers is calculated as the unstabilized price, i.e., payout price of CEMA minus (plus) any stabilization bounty (levy). The marketing margin is obtained by subtracting the producer price from the adjusted f.o.b. price.

Figure 3.2a Copra marketing margins in Solomon Islands, 1972–87

Figure 3.2b Copra margins and f.o.b. prices in Solomon Islands, 1972–87

Source: Solomon Islands, Commodities Export Marketing Authority, *Annual Reports*, various years.

Data for f.o.b. and producer prices were extracted from the annual accounts of CEMA. These figures are for the year ended 30 September, with three exceptions. The accounts for 1985 are for the nine months October–June, while those for 1986 and 1987 are July–June. The unstabilized producer prices are summarized by Ilala (Table 14.3).

Two events make it difficult to assess the normal marketing margin for CEMA. First, the authority received an injection of SI\$0.25 million in funds in 1980 to set up and operate the freight equalization scheme which was in force until February 1986. Second, CEMA received SI\$1.2 million in 1976 and SI\$2.5

million in 1987 from the EC's Stabex scheme. The first injection of funds presumably enabled CEMA to maintain payout prices at levels higher than otherwise would have been possible. Marketing margins have therefore been kept lower than normal during the operation of the freight equalization scheme, but the quite small amount of the grant probably meant this effect was not substantial. The Stabex funds appear to have been set aside for capital investment in marketing infrastructure, and thus not directly used to maintain producer prices. There is nevertheless the possibility that use of Stabex funds has enabled CEMA to direct funds to general operations which otherwise would have been spent on improving marketing infrastructure.

It would appear that a 'pot-holing' operation took place in addition to normal stabilization measures in 1986. Margins were negative in that year with unstabilized producer prices higher than f.o.b. prices. Some of this 'subsidy' appears to have been reclaimed in the wake of slightly improved prices in 1987 with a higher-than-average margin taken by CEMA.

Nevertheless, it is clear from Figures 3.2a and 3.2b that CEMA has been able to operate with low marketing margins. The average margin for the period 1972–87 was SI\$39/tonne (1989 US\$58/tonne), or 14.5 per cent of the f.o.b. price.

It is difficult to be sure about the trend in marketing margins because of the two injections of funds referred to above. However, there is no evidence that margins and costs have been increasing in real terms over time. A factor that should have helped contain marketing costs in recent years has been the investment under the Rural Services Project, funded by the Asian Development Bank, in rural infrastructure and support facilities (Ilala 1989).

Vanuatu

Data on copra marketing in Vanuatu were obtained from two sources: Fowler (1986) for the years 1973–84 and Vanuatu Commodities Marketing Board (VCMB) for 1985–89. Fowler included information about export taxes, and thus the calculated marketing margin is net of this item. VCMB figures did not include export taxes so, to maintain consistency, a tax of 5 per cent of the f.o.b. price was used (consistent with the rate applicable in other years). Estimates of margins made by Fowler are distorted to some extent by the inclusion of stabilization bounties and levies. Even so, pre-1982 margins were quite wide, especially in proportion to the f.o.b. price, as illustrated in Figure 3.3b. It is not known to what extent the absolute value of the margins (Figure 3.3a) includes inter-island shipping, which can be very expensive, although copra is also exported out of Luganville.

Following the boom price in 1974, from which traders did quite well (Figure 3.3a), margins appear to have settled down to a steady level, regardless of the f.o.b. price, until VCMB started operations in April 1982. After the very low margin charged by VCMB in 1982 (according to Fowler, to 'emphasise the point that it intended to improve returns to the producer' (1986:77)), margins rose initially, but became negative for the years of price collapse in 1985–86. Even

after 1986, margins are very low, indicating continuing price support given the relatively high marketing costs incurred by VCMB during this period (Fleming and Antony, Chapter 5). VCMB operations continue to be subsidized, with an amount of Vatu 970 million provided by the government in 1990 (Anon. 1991).

Figure 3.3a Copra marketing margins in Vanuatu, 1973–78

Figure 3.3b Copra margins and f.o.b. prices in Vanuatu, 1973–78

Sources: M. Fowler, *Copra in Vanuatu: A Review of its Production and Marketing in Recent Years*, Department of Agriculture, Livestock and Forestry, Port Vila, 1986; Vanuatu Commodities Marketing Board, *Annual Reports*, various years.

Tonga

The only available data source on copra marketing margins in Tonga (Rose 1978) contained merely f.o.b. and producer prices. Therefore, if there were other items (e.g., export taxes), they are missing from the analysis. Figures 3.4a and 3.4b illustrate marketing margins for the period 1973 to 1978. Although the number

Figure 3.4a Copra marketing margins in Tonga, 1973–1978

Figure 3.4b Copra margins and f.o.b. prices in Tonga, 1973–78

Source: D. Rose, *Commodity stabilization in Tonga*. A report prepared for the New Zealand Ministry of Foreign Affairs, Wellington, unpublished paper, 1978.

of years for which data are available is small, they reveal that Tongan margins have been quite high in comparison with other countries.

Western Samoa

Analysis of marketing margins of the Copra Board of Western Samoa is restricted by lack of information for 1981 and deficiencies in information on margins and f.o.b. prices for 1982–84. However, figures are available for the periods 1970–80 and 1985–88 and estimates can be made for 1982–84 which enable some calculations to be done.

For the period 1970–80, annual statistics on f.o.b. prices and average prices paid to copra producers are available from the Western Samoa Statistics Department (1982). The f.o.b. prices are not adjusted for export tax which averaged 4 per cent of f.o.b. price for the period 1985–88. Marketing margins of the Copra Board have been calculated as the f.o.b. price minus the average payout price. Price stabilization was not formally introduced until 1981 and stabilization activities of the Board were not known for the period 1982–88, so producer prices were not adjusted for stabilization effects.

The f.o.b. prices of copra for the period 1982–84 were calculated as implicit prices because actual selling prices to the oil mill were unavailable. The procedure adopted was to apply the price ratios of European c.i.f. copra to coconut oil to the f.o.b. prices for coconut oil. These were found to be 0.628 for the period 1982–87, extremely close to the ratio of coconut oil extracted from copra of 0.625:1 in Papua New Guinea suggested by Wheeler, Sackett and Densley (1978:33). Copra selling prices reported by the Copra Board in its annual accounts were used for the period 1985–88. Producer prices were obtained from *Annual Statistical Abstracts* (Western Samoa 1982) except for the period 1985–88

Figure 3.5a Copra marketing margins in Western Samoa, 1970–88

Figure 3.5b Copra margins and f.o.b. prices in Western Samoa, 1970–88

Source: Western Samoa, Statistics Department, *Annual Statistical Abstract*, Apia, 1982 (and earlier issues); Western Samoa Copra Board.

when buying prices reported by the Copra Board in its annual accounts were used, less the deficit per tonne of throughput of the Board.

Figures 3.5a and 3.5b contain a summary of margins for 1970–88. They are demonstrably high, averaging 33 per cent of the f.o.b. price and US\$180/tonne over the study period.

Kiribati

The source of data for Kiribati was the *Statistical Yearbook* published by the Statistics Office (Kiribati 1989). As shown in Figures 3.6a and 3.6b, the movement of copra marketing margins is the most extreme of all scrutinized Pacific island countries. Between 1979 and 1988, the absolute size and the direction of the margin (Figure 3.6a) moved very much in the same way as its relative size (i.e., as percentage of the f.o.b. price) (see Figure 3.6b). A comparison of c.i.f. and f.o.b. prices reveals that the setting of the marketing margin was subordinated to the objective of price stabilization.

Figure 3.6a Copra marketing margins in Kiribati, 1979–88

Figure 3.6b Copra margins and f.o.b. prices in Kiribati, 1979–88

Sources: Kiribati, Statistics Office, *Kiribati Statistical Yearbook 1988*, Ministry of Finance, Bairiki, 1989.

Comparison of cocoa marketing margins

A comparison of cocoa export marketing margins was carried out for three countries: Papua New Guinea, Solomon Islands and Western Samoa.

Papua New Guinea

Good descriptions of the nature of cocoa export marketing in Papua New Guinea are provided by Densley and Wheeler (1978), Papua New Guinea Cocoa Board (1988), Livingstone (1989, Chapters 7–9) and Ivarami and Yarbrow (Chapter 9).

The private sector dominates all parts of the cocoa production and marketing systems, although the Cocoa Board carries out active regulatory and facilitatory roles. The major post-harvest activities are the removal of wet beans from the pod, fermentation and drying of the beans, and bagging for transport. Beans must be sold to registered exporters of whom there were 12 in 1987–88. Three exporters dominate the industry; their activities are thoroughly described by Livingstone (1989:65) who reported that they accounted for 98 per cent of exports in 1987. However, their presence is not equally distributed among cocoa-producing areas.

Cocoa marketing upstream from the export level varies among cocoa-producing areas. For the purposes of this chapter, the focus is on private firms (dealers) which trade in cocoa beans. Cocoa can be sold as either wet beans or dried beans. All cocoa is exported in the bean form, principally to Europe.

The Cocoa Board of Papua New Guinea (1988) considered that the opportunity for collusion in setting prices to producers is limited. This is because it closely monitors export sales contracts and the prices paid to producers. Livingstone (1989) also considered the issue of competition among exporters. His findings are reviewed below.

The marketing margin analysis was undertaken using three secondary data sources, all purported to rely on the data collection processes of the Cocoa Board. First, monthly data on exporters' and dealers' margins were analysed for the period January 1985 to December 1987, using data reported by Livingstone (1989). Results of Livingstone's analysis are summarized after some modifications were made to his analyses. Second, monthly data were analysed for the period January 1988 to October 1989, using figures reported by Coulter (1989). Third, annual data on export marketing margins reported by Asian Development Bank (1990) were analysed for the period 1976–89. Margins were estimated in kina/tonne, and expressed as a percentage of the f.o.b. price for all data sources.

Cocoa export marketing margins were measured as the f.o.b. cocoa export price minus the d.i.s. price. The d.i.s. price is adjusted for the management levy (K30/tonne during the study period) and export tax (discontinued from December 1988). Dealers' prices are the roadside buying prices of dealers collected by Livingstone (1989), and are equal to d.i.s. prices minus the dealers' marketing margin.

Livingstone (1989: Chapter 9) provides a detailed analysis of pricing and competition in the cocoa export industry in Papua New Guinea. What follows is a summary of the main findings of this study, focusing on those issues most pertinent. Livingstone concentrated on the daily prices of the four major dealers in East New Britain for the period 1984–87. He aggregated daily data to a monthly basis and examined variations in price differentials as a measure of competition among exporters. Results suggested 'a useful degree of competition' (Livingstone 1989:74).

He also examined the pricing behaviour of four competing fermentaries in the area of Gaulim in East New Britain, and compared their local fermentary prices with those of the main dealers in Rabaul. Livingstone (1989:76) inferred from his results that small rural fermentaries 'may not be very astute in setting their prices', and are likely to have difficulty in effectively competing with larger dealers.

Similar studies were carried out in East and West Sepik. Here, as probably in other regions outside East New Britain, the marketing system is in a state of transition towards something like the East New Britain system, and is somewhat disjointed according to Livingstone. He consequently decided to concentrate on marketing in East New Britain as a guide to the way the cocoa industry is likely to develop nationally. The focus was on the export level, with studies of the way in which price-setting at this level is transmitted to the producers.

Figure 3.7 shows that total marketing margins fall fairly consistently in the range of 25–35 per cent of f.o.b. price. Dealers' margins are consistently much higher than exporters' margins, averaging 25 per cent and 7.5 per cent, respectively, for the period. A remarkable feature is the relative constancy of overall margins as a percentage of f.o.b. price despite marked fluctuations in exporters' margin percentages. It appears as though dealers attempt to keep prices to producers as a fairly constant percentage of f.o.b. price.

Coulter (1989b) used Cocoa Board statistics to measure exporters' margins and relationships between exporters' margins and f.o.b. prices and d.i.s. prices and f.o.b. prices. Specification of the lag between changes in export prices and changes in d.i.s. prices is of particular interest in his study. From interviews with exporters, Coulter determined that the appropriate lag should be between two and three months.

Average monthly exporters' margins for the period January 1988 to October 1989 are shown in terms of percentage of f.o.b. price in Figure 3.8. They were K121/tonne (1989 US\$147/tonne) in 1988 and K93/tonne (1989 US\$108/tonne) in 1989, or 9.8 per cent and 9.4 per cent of f.o.b. price, respectively. These compare with an average estimate of 7.5 per cent for 1985–87 by Livingstone, reported above.

Annual data were used by the Asian Development Bank (1990) to examine changes in exporters' margins over time and the relationships between f.o.b. prices and margins. These margins are illustrated in both 1989 US dollar and percentage terms in Figures 3.9a and 3.9b for the period 1976–89.

Exporters' margins reported above for the Livingstone and Coulter studies are similar to the calculations of annual marketing margins over the period 1978–89 reported by Asian Development Bank (1990). In the latter case, margins for the years 1976 and 1977 are ignored as they are atypically low. The Asian Development Bank calculated annual margins which averaged 8 per cent of f.o.b. prices for this period.

Figure 3.8 Cocoa margins and f.o.b. prices in Papua New Guinea, January 1988 to October 1989

Source: H.K. Coulter, Notes on cocoa export margins in Papua New Guinea, 1988–89, Hassall and Associates, Canberra, unpublished paper, 1989b.

Figure 3.9a Cocoa export marketing margins in Papua New Guinea, 1976–89

Figure 3.9b Cocoa margins and f.o.b. prices in Papua New Guinea, 1976–89

Source: Asian Development Bank, *Papua New Guinea Commodity Stabilization Study*, Draft Report, Manila, 1990.

Solomon Islands

The cocoa export marketing system in Solomon Islands has been described by Ilala and Pelomo (1988) and Frazer (1986). It is dominated by private traders, as in Papua New Guinea, but without the strong regulatory functions exerted by the Cocoa Board in Papua New Guinea.

Two analyses of cocoa export marketing margins in Solomon Islands are reported in this chapter. The first relies on primary data for weekly cocoa marketing processes collected by Frazer (1986) in North Malaita for the period from August 1985 to June 1986. Weekly data were aggregated, and quarterly

average producer prices were compared with quarterly f.o.b. prices compiled and reported by the Solomon Islands Statistics Office (1987a). As the producer prices reported by Frazer were for wet beans, an equivalent dry bean price was estimated using a conversion rate of 1:0.4, suggested by ILACO (1981), similar to the ratio used by Livingstone (1989) in his study of cocoa marketing in Papua New Guinea.

Second, results are reported for an analysis of annual data from 1970 to 1988 undertaken by Coulter (1989b). Missing data on producer prices in 1980–81 and 1983 reduced the number of observations from 19 to 16. In both studies, f.o.b. prices were adjusted for export duty. In the study using annual data, an adjustment was also made for the management levy of SI\$10/tonne introduced in 1987.

The marketing margins using annual data for the period 1970–88 are illustrated in Figure 3.10a. They have been calculated per tonne of exports and converted to 1989 US dollars. In general, they are high, especially when compared with those reported above for Papua New Guinea. An unusual feature of the calculations is the large variation in margins between 1974–75 and 1976–77. No reason is known for this apparent anomaly.

Two features of the percentages of margins to f.o.b. prices shown in Figure 3.10b are worthy of mention. First, percentages were very high in the early years of the study period, averaging 73 per cent between 1970 and 1972. Second, margins as percentages of f.o.b. prices have become more settled in recent years. Results of the marketing margin analysis for cocoa export marketing in North Malaita confirm the high margins reported above (Frazer 1986). They averaged 40 per cent and 47 per cent of f.o.b. prices for the second half of 1985 and first half of 1986, respectively. These margins compare with estimates of 30 and 38 per cent for 1985 and 1986 reported in Figure 3.10a and 3.10b. The discrepancy can be explained by the different stages in the cocoa export marketing process at which the estimates were made. In the case of the North Malaita study, roadside

Figure 3.10a Cocoa marketing margins in Solomon Islands, 1970–88

Figure 3.10b Cocoa margins and f.o.b. prices in Solomon Islands, 1970–88

Source: H.K. Coulter, Notes on cocoa export margins in Papua New Guinea, 1988–89, Hassall and Associates, Canberra, unpublished paper, 1989b.

prices for wet beans were used; the annual estimates were based on d.i.s. prices recorded in the *Statistical Yearbooks*.

The large differences in marketing margins between Solomon Islands and Papua New Guinea need further exploration. On the surface, one would expect fairly similar margins given the similar structures of the industries. One possible explanation is that the industry in Papua New Guinea is larger and has been established longer. Another is that the stronger regulatory role of the Cocoa Board in Papua New Guinea has restrained exporters from earning supernormal profits. It is notable that margins in Solomon Islands are sensitive to f.o.b. price whereas in Papua New Guinea they are insensitive (see below).

The levels of margins taken by Solomon Island North Malaitan roadside buyers of around 10 per cent are reasonable given the difficult conditions under which they operate. Also, they incorporate in most cases the fermenting of the wet beans. Relative to the dealers' margins in Papua New Guinea, these margins appear quite modest.

Western Samoa

Unlike the situation in Papua New Guinea and Solomon Islands, cocoa exporting in Western Samoa was in the hands of a marketing authority, the Cocoa Board, until 1990 when it was dissolved (Antony and Fleming, Chapter 2). Limited information is available on the operations and costs of the Cocoa Board. Cocoa Board annual accounts data for only three recent years, 1986–88, have been used in this study.

It is difficult to measure marketing margins in this study period because the Cocoa Board operated with large deficits. These deficits were 12, 28 and 113 per cent of the f.o.b. price for 1986, 1987 and 1988, respectively. The approach adopted is to treat the Board as a non-profit organization for the period, in which case marketing margin is equal to marketing cost. Marketing costs are decomposed into operating and selling costs in the annual accounts.

Marketing margins for the three years studied are shown in 1989 US dollars in Figure 3.11a. Marketing margins as a percentage of f.o.b. prices are shown in Figure 3.11b, along with tonnages of cocoa purchased by the Board. Costs are decomposed into operating and selling expenses in Figure 3.11b.

The margins shown in Figure 3.11a are extraordinarily high compared with those reported above for Papua New Guinea and Solomon Islands (after 1972). Figure 3.11b demonstrates that operating costs per tonne of cocoa throughput are very sensitive to changes in throughput. This sensitivity is indicative of a predominance of fixed costs in the Board's operations. It is dramatically illustrated in 1988 when operating costs per tonne rose to 88 per cent of f.o.b. price as cocoa throughput plunged to only 281 tonnes. It appears that the Cocoa Board was highly capitalized relative to the volume of cocoa it was exporting. The high marketing costs per tonne exported by the Board might explain why the production and trade of *koko Samoa* have been flourishing while official cocoa exports have been sluggish in recent years.

Figure 3.11a Cocoa marketing margins in Western Samoa, 1986–88

Source: Western Samoa Cocoa Board.

Figure 3.11b Cocoa margins and f.o.b. prices in Western Samoa, 1986–88

International comparisons of copra and cocoa marketing margins

Comparisons of marketing margins for copra and cocoa are provided in Figures 3.12a and 3.12b, respectively. There is a need for caution in comparing these figures for reasons spelled out earlier in the chapter, especially differences in marketing services provided and time periods, and changes over time in margins. Nevertheless, some generalizations can be made.

One noteworthy feature is the relatively low average margin for copra in Solomon Islands and Papua New Guinea. The margin in Kiribati is significantly higher, but quite reasonable given the smallness and remoteness of Kiribati and the dispersed nature of the rural population. The high margins for Tonga and Western Samoa reflect the difficulties experienced by marketing authorities in these nations. It should be noted, however, that recent margins in Western Samoa have been much lower, averaging US\$82/tonne in the period 1984–88. The relatively high margins in Vanuatu were unexpected.

Margins for cocoa are lower for private marketers than for the marketing authority studied. However, two qualifications are needed. First, it would be useful to cover a broader group of marketing institutions than the three analysed here. Second, substantial differences on margins between private traders may reflect the different regulatory and facilitatory roles of statutory authorities in Papua New Guinea and Solomon Islands, indicating an important role for these authorities.

Figure 3.12a Average copra marketing margins in six South Pacific island countries

Figure 3.12b Average cocoa marketing margins in three South Pacific island countries.

Source: Calculated by authors.

The effect of export prices on marketing margins

Regression analyses were undertaken to determine how effectively commodity prices are transmitted between marketing stages (i.e., how 'transparent' the market is). Margins were also regressed against downstream commodity prices to determine the extent to which discretionary pricing is possible among firms operating in a specified stage of the marketing process. Analyses of copra marketing systems for all six countries are shown below. Analysis could only be undertaken for two cocoa marketing systems. Insufficient observations meant no meaningful information could be obtained from regressions for Western Samoa.

Copra margins in Papua New Guinea Regression analysis of the data on copra margins and prices in Papua New Guinea yielded the following relationships (figures in parentheses are t-values):

$$\text{DEPOT} = 6882.0 + 0.555 \text{ FOB} - 3.405 \text{ YEAR} \quad (1)$$

(1.315) (5.262) (-1.291)

$$\text{Adjusted } R^2 = 0.635$$

$$\text{MARGIN} = 3143.5 + 0.953 \text{ FOB} - 1.736 \text{ YEAR} \quad (2)$$

(0.239) (8.787) (-0.261)

$$\text{Adjusted } R^2 = 0.820$$

where DEPOT = d.i.s. price,
 FOB = f.o.b. price,
 YEAR = time trend variable,
 MARGIN = marketing margin.

As stabilization payments were not known for 1973-74, these years were excluded when estimating these equations.

The statistical properties of both estimations are acceptable, although equation (1) is less robust overall than equation (2). The highly significant role of the f.o.b. price is obvious in both equations, while the intercept term and the time variable are not significant. An examination of the elasticity of d.i.s. price to f.o.b. reveals that only part of the variation in the price received has been passed on to the producers by Copra Marketing Board between 1973 and 1989. In contrast, changes in f.o.b. price were reflected in the margin to a very high degree. No conclusive evidence of trend could be identified in either estimate.

As pointed out before, the data imply two periods of different pricing behaviour by CMB. To test for this, the estimations were repeated for the time period 1979 to 1989, yielding the following results:

$$\text{DEPOT} = 14381 + 0.491 \text{ FOB} - 7.171 \text{ YEAR} \quad (3)$$

$$(1.716) \quad (6.601) \quad (-1.701)$$

$$\text{Adjusted } R^2 = 0.898$$

$$\text{MARGIN} = -27954 + 1.044 \text{ FOB} + 13.912 \text{ YEAR} \quad (4)$$

$$(-1.599) \quad (7.388) \quad (1.581)$$

$$\text{Adjusted } R^2 = 0.853$$

The robustness of both estimations increases for the restricted time period, that of the d.i.s. price significantly so. The f.o.b. price remained significant, and the other variables have approached the 5 per cent significance level. The implications borne out by the elasticity estimates are even more conclusive.

It appears, therefore, that CMB uses a 'secondary' stabilization instrument by allowing margins to shrink when world prices of copra are low, and by recouping the losses incurred in bad years by increasing margins in the good ones. This does not contradict Livingstone's finding that 'there has been no secular tendency' in CMB's margins, and that the Board 'has been performing its own tasks well enough' (Livingstone 1989:134).

Copra margins in Solomon Islands

Regression analyses carried out on the relations between producer and f.o.b. prices and between margins and f.o.b. prices in Solomon Islands are summarized below:

$$\text{PROD} = -19.80 + 0.93 \text{ FOB} \quad (5)$$

$$(-1.12) \quad (16.39)$$

$$\text{Adjusted } R^2 = 0.95$$

$$\text{MARGIN} = 19.80 + 0.07 \text{ FOB} \quad (6)$$

$$(1.16) \quad (1.12)$$

$$\text{Adjusted } R^2 = 0.09$$

where PROD = price paid to producers.

They show that there is strong price transparency, with a highly significant correlation between producer and f.o.b. prices. The elasticity of price transmission is greater than unity, at 1.08, indicating that a 1 per cent change in f.o.b. prices causes about a 1.08 per cent increase in producer prices. On the other hand, marketing margins appear unaffected by f.o.b. prices, although the coefficient on the f.o.b. price variable is positive (0.07) and significant at a fairly low level (less than 0.8).

Copra margins in Tonga The following estimates were made of the relations between margins and prices for copra marketing in Tonga:

$$\text{PROD} = -34.49 + 268.8 \ln \text{FOB} - 170.7 \ln \text{YEAR} \quad (7)$$

(-0.79E-3) (15.54) (-0.30E-1)

$$\text{Adjusted } R^2 = 0.970$$

$$\text{MARGIN} = 15945 + 0.199 \text{FOB} - 8.045 \text{YEAR} \quad (8)$$

(1.156) (1.633) (-1.153)

$$\text{Adjusted } R^2 = 0.616$$

Equation (7) has very strong explanatory power, indicated by the high adjusted R^2 . It presents a strong case for a high level of price transparency between f.o.b. and producer receipts. The time trend, however, does not appear to have been important. Equation (8) was not as robust overall as most of the other estimations in this chapter. However, the one-tailed t-test on the f.o.b. price yields a significance level of between 10 and 5 per cent, and thus its indication of an effect of the f.o.b. price on margins cannot be entirely ignored.

Copra margins in Vanuatu The change in copra pricing policy which followed the establishment of the Vanuatu Commodities Marketing Board in 1982 is evident from the results of regressions on the relations between producer and f.o.b. prices in equation (9) and between margins and prices in equation (10):

$$\begin{aligned} \text{PROD} = & -12091 + 309.33 \text{FOB} - 217.2 \text{FOB*VCMB} \\ & (-0.935) \quad (6.392) \quad (-3.525) \\ & + 1276 \text{VCMB} + 5.312 \text{YEAR} \quad (9) \\ & (3.591) \quad (0.819) \end{aligned}$$

$$\text{Adjusted } R^2 = 0.751$$

$$\begin{aligned} \text{MARGIN} = & -6797.1 + 0.465 \text{FOB} - 97.48 \text{VCMB} \\ & (-0.472) \quad (4.536) \quad (-1.113) \\ & - 3.457 \text{YEAR} + 0.253 \text{FOB*VCMB} \quad (10) \\ & (-0.476) \quad (1.482) \end{aligned}$$

$$\text{Adjusted } R^2 = 0.807$$

where VCMB = dummy variable for VCMB operations
(0 for 1973-81, 1 for 1982-89).

A very strong price transparency between f.o.b. and producer prices is apparent in equation (9), but the intercept and the time

trend are insignificant. At the same time, margins also seem to have varied with f.o.b. prices. The effect of VCMB operations appear to have reduced the degree of price transparency, indicated by the significant and negative sign on the dummy price variable in equation (9). On the other hand, equation (10) shows that margins have been more affected by f.o.b. prices during the period in which VCMB operated. The effect of f.o.b. prices on margins is significant and quite substantial for the whole period. Again, no time trend is evident in equation (10).

**Copra margins
in Western
Samoa**

Regression analyses summarized below show that f.o.b. prices significantly influenced both producer prices and marketing margins:

$$\begin{aligned} \text{PROD} &= -156 + 24.0 \text{ TDU} + 0.44 \text{ FOB} + 0.86 \text{ FOB} \cdot \text{TDU} \\ &\quad (-4.01) \quad (2.31) \quad (15.34) \quad (142.5) \\ &+ 3.37 \text{ YEAR} \\ &\quad (2.15) \end{aligned} \quad (11)$$

$$\text{Adjusted } R^2 = 0.99$$

$$\begin{aligned} \text{MARGIN} &= -24.4 + 132 \text{ TDU} + 0.56 \text{ FOB} + 0.14 \text{ FOB} \cdot \text{TDU} \\ &\quad (-2.31) \quad (4.01) \quad (19.80) \quad (7.04) \\ &- 3.37 \text{ YEAR} \\ &\quad (1.72) \end{aligned} \quad (12)$$

$$\text{Adjusted } R^2 = 0.98$$

where TDU = time dummy variable for the period 1985–88, and the t ratios for the 1985–88 intercepts are calculated for differences from the 1970–84 intercepts.

This contrasts with the situation in Solomon Islands where margins were found to be insensitive to f.o.b. prices. Margins in Western Samoa were more sensitive to f.o.b. prices, indicating the presence of a good deal of discretionary pricing. A 1 per cent increase in f.o.b. prices brings about a 1.47 per cent increase in the copra marketing margin for the 1970–84 period but only a 0.47 per cent increase in the 1985–88 period. A little over 70 per cent of changes in f.o.b. prices are transmitted to producer prices in the period 1970–84. This figure increases to 88 per cent in the period 1985–88. Time trend variables were found to be marginally significant, with a decline in margins over time after accounting for changes in f.o.b. prices.

Copra margins in Kiribati

The influence of stabilization measures on the setting of copra marketing margins in Kiribati is confirmed by the following results of the regression analyses:

$$\text{PROD} = 245.39 + 16.51 \ln \text{FOB} - 52.60 \ln \text{YEAR} \quad (13)$$

(0.919) (0.405) (-1.154)

$$\text{Adjusted } R^2 = 0.455$$

$$\text{MARGIN} = -19645 + 0.929 \text{ FOB} + 9.782 \text{ YEAR} \quad (14)$$

(-0.729) (6.287) (0.721)

$$\text{Adjusted } R^2 = 0.809$$

The poor statistical properties of equation (13) support the visual observation that there is very little causal relationship between f.o.b. and producer level prices. On the other hand, the marketing margin is strongly determined by the f.o.b. price in equation (14).

Cocoa margins in Papua New Guinea

Regression estimates were made of the relationships between cocoa f.o.b. prices and marketing margins and f.o.b. prices and dealers' prices. In the case of Livingstone's study, regression estimates are also reported for relationships between f.o.b. prices and d.i.s prices and d.i.s. prices and dealers' prices. Relationships were examined for both the short run and long run. Both daily and monthly data were used.

Livingstone's main findings pertinent to this study are:

- There are significant positive relationships between dealer, d.i.s. and f.o.b. prices, although the low explanatory power of the regression models means there are other factors affecting prices at the three different levels not represented in the models.
- The proportions of price changes passed on are 66 per cent between exporters and dealers and 26 per cent between dealers and producers. Proportions are higher if long-term relationships are examined, with 74 per cent of export prices passed back to producers compared with 41 per cent in the short run.
- The cocoa export marketing system as a whole is effective in reducing cocoa price fluctuations to growers. While the stabilization scheme is the major factor at work in achieving this, external fluctuations are also cushioned by marketers taking up some of the price instability in their margins.
- Indications are that the cocoa export marketing system exhibits what Livingstone (1989:81) calls 'a reasonable degree of competition which might be described as "workable competition"'.
- There appears to be weaker competition (and greater discretionary power) among dealers than among exporters.

There are two concerns with Livingstone's regressions. First, he appears to report marginal changes in prices rather than the elasticities implied in the second point above. Second, he reports some very low Durbin-Watson statistics (without comment) which implies autocorrelation is present in at least some of the equations. Therefore, his models were re-worked (using the monthly data only) to test if his findings are still valid after correcting for autocorrelation and estimating point elasticities of price transmission between the three levels in the marketing system. Results are reported in equations (3), (4a) and (5a) in Table 3.1. Respective elasticities of price transmission for these three equations are 0.66, 0.29 and 0.20. The percentage of price change passed back to dealers by exporters (66 per cent) is therefore the same as Livingstone's estimate while that for price change passed back from dealers to producers is 6 per cent lower at 20 per cent. Only 29 per cent of f.o.b. price is estimated to be passed back from exporters to growers compared with an estimated 41 per cent in Livingstone's computation. A long-run estimate of the elasticity of price transmission from exporters to producers of 0.56 is derived from equation (4b), using a Nerlovian distributed lag structure. This estimate is derived from an autocorrelation model which was used because Durbin's *h* statistic was close to the upper limit of the acceptable range of +2.00. It compares with Livingstone's estimate of 0.74. If the ordinary least squares model were considered acceptable, the respective elasticity is 0.81, slightly higher than Livingstone's estimate.

Despite some modifications to the results obtained by Livingstone, the results reported in Table 3.1 do not significantly alter the findings that Livingstone drew from his study. It is considered, therefore, that the five findings reported above accurately reflect pricing behaviour and competition in the cocoa export industry in Papua New Guinea, as represented by the situation in East New Britain.

Two further sets of information can be gleaned from the monthly statistics gathered by Livingstone (1989). These are average magnitudes of exporters' and dealers' margins (see Figure 3.7) for the period 1985-87, and the relationships between these margins and f.o.b. prices (see equations (1) and (2) in Table 3.1).

Dealers' margins and exporters' margins are both positively and significantly affected by f.o.b. prices, confirming Livingstone's finding that there is some scope for discretionary pricing at both stages of the marketing process. Both margins are very sensitive to changes in f.o.b. prices, with elasticities of price transmission greater than unity. In the case of exporters' margins, long-run sensitivity is considerably greater than short-run sensitivity.

Table 3.1 Cocoa marketing margin regression results using Livingstone's data

Dependent variable		Explanatory variables				
		Intercept	F.o.b.	D.i.s.	DP _{t-1}	Em _{t-1} Time
1a.	Exporters' margin (EM) [Auto] DW = 1.76 Adjusted R ² = 0.25	-673 (-2.09)	0.39 (2.58)			
1b.	Exporters' margin (EM) [OLS] Durbin's h = 0.72 Adjusted R ² = 0.28	-796 (-2.60)	0.41 (2.94)		0.48 (3.19)	
2.	Dealers' margin (DM) [Auto] DW = 1.78 Adjusted R ² = 0.30	-194 (-0.60)	0.34 (2.25)			
3.	D.i.s. price [Auto] DW = 1.76 Adjusted R ² = 0.49	673 (2.09)	0.61 (4.04)			
4a.	Dealers' price [Auto] (DP) DW = 1.73 Adjusted R ² = 0.74	1051 (7.82)	0.20 (3.25)			-1.67 (-1.88)
4b.	Dealers' price [Auto] Durbin's h = 0.23 Adjusted R ² = 0.74	383 (2.03)	0.22 (3.43)		0.41 (3.09)	
5a.	Dealers' price [Auto] DW = 1.66 Adjusted R ² = 0.71	1187 (9.75)		0.14 (2.47)		-1.81 (-1.72)
5b.	Dealers' price [OLS] Durbin's h = 0.35 Adjusted R ² = 0.76	1.51 (0.01)		0.19 (4.10)	0.73 (8.40)	

Sources: I. Livingstone, *The Marketing of Cocoa and Copra in Papua New Guinea*, Discussion Paper No.37, Institute of National Affairs, Port Moresby, 1989; and authors' calculations.

Regression analyses were also undertaken using Coulter's (1989) data which showed that best results were obtained using a two-month lag between f.o.b. prices and d.i.s. prices. The regression estimates for the two-month lag reveal a higher significance level for the coefficient on the f.o.b. price variable, and better explanatory power of the whole equation, compared with the regression estimates for one-month and three-month lags. Results are as follows:

$$\text{DEPOT} = -67.1 + 0.96 \text{ FOB}_{t-2} \quad (15)$$

(-0.93) (15.50)

$$\text{Adjusted } R^2 = 0.92$$

$$\text{MARGIN} = 67.1 + 0.04 \text{ FOB}_{t-2} \quad (16)$$

(0.93) (0.58)

$$\text{Adjusted } R^2 = 0.02$$

Regression estimates reported in equation (16) show that marketing margins are insensitive to changes in f.o.b. prices. This is *prima facie* evidence that there is strong competition in cocoa export marketing which prevents individual exporters from varying their margins as export prices vary. It provides a picture different from that reported above in Livingstone's study where exporters' margins were found to be sensitive to f.o.b. prices.

In contrast, results in equation (15) show that d.i.s. prices (net of stabilization levies or bounties) are significantly sensitive to f.o.b. prices. A 1 per cent change in f.o.b. price induces a change in price paid to producers which is itself not significantly different from 1 per cent. This unit elasticity of price transmission demonstrates that the cocoa export market is very transparent. Note that this elasticity is higher than that obtained by Livingstone (0.66).

The Asian Development Bank found from regression analyses that, similar to Coulter's analysis, exporters' margins are not strongly influenced by f.o.b. export price.

It is apparent from observations made of the cocoa export industry in Papua New Guinea and from the results of the marketing margin analysis reported above that the industry is competitive and operates with quite low costs and profit margins. Changes in export prices are fairly quickly passed back to the cocoa producers.

The extent to which margins set by marketers respond to changes in f.o.b. prices is difficult to assess. Little or no evidence of response was found in two cases, yet a strong response was found by Livingstone (1989). Livingstone's study has the merit of using data disaggregated to individual exporters and traders, which is the most desirable approach in

marketing margin analysis. However, the coverage of marketers is much narrower than that by Coulter (1989b) and Asian Development Bank (1990). It suggests that there is some spatial variation in the extent to which discretionary pricing is possible in the cocoa industry in Papua New Guinea. Certainly, Livingstone observed that the degree of concentration varies between regions and also over time. However, there is no apparent reason why discretionary pricing should be any greater in East New Britain than in other cocoa-producing areas in Papua New Guinea.

Cocoa margins in Solomon Islands Regression analyses of margins and producer prices on f.o.b. prices in Solomon Islands are reported below:

$$\text{PROD} = -69.0 + 0.54 \text{ FOB} + 37.9 \text{ YEAR} \quad (17)$$

(-0.73) (6.80) (1.97)

$$\text{Adjusted } R^2 = 0.81$$

$$\text{MARGIN} = 69.0 + 0.46 \text{ FOB} - 37.9 \text{ YEAR} \quad (18)$$

(0.73) (5.73) (-1.97)

$$\text{Adjusted } R^2 = 0.95$$

The results show that both margins and producer prices are sensitive to f.o.b. prices. In the case of margins, the elasticity of price transmission is high (1.45), while the elasticity of price transmission between f.o.b. prices and producer prices is much lower (0.79). There has been a downward trend in margins over the study period, after accounting for changes in margins brought about by changes in f.o.b. prices.

Conclusion

The analyses of marketing margins carried out in this study were inconclusive. Some marketing authorities operated on reasonable margins, while others took unduly high margins. Similarly, some private marketers maintained reasonable margins, while others were too high. These findings do indicate, however, that fears of private marketer exploitation of producers are unfounded.

Proponents of marketing authorities and private marketers can both find evidence to support their views. On one hand, because some marketing authorities can be shown to be operating with reasonable margins, their proponents could argue that there are no grounds for replacing them with a private marketing system. Alternatively, opponents of marketing authorities could reasonably argue that proponents of marketing authorities should show that they can operate with margins lower than those of private marketers.

The inconclusive nature of the empirical evidence highlights the need to look beyond marketing margins to determine the relative merits of private and public

marketers. As pointed out above, marketing margin analysis is of limited use because of its narrow line of inquiry. The various dimensions of quality of marketing services offered by different marketers, for instance, broaden the debate considerably, as does the capacity of different institutions to innovate. Assessment of marketing margins helps identify the extreme cases of good or bad marketing management but, for cases in between, a wide variety of factors need to be considered.

CHAPTER 4

Regulatory functions and the performance of marketing authorities in the South Pacific

Mark Ivarami and Hugh Coulter

In the 1920s countries throughout the world began to regulate the marketing of agricultural products and to empower either state-directed organizations or producers to implement the regulations. The most common organizational arrangement of the regulatory bodies was the marketing board or marketing authority.

Legislation establishing marketing boards was introduced in Australia in the early 1920s and boards were rapidly adopted as the most suitable vehicle for regulating agricultural commodity marketing. Other countries soon followed, as shown by the passing of the Agricultural Marketing Acts of 1931 and 1933 in the United Kingdom, Part II of the Agricultural Adjustment Act of 1933 and the Agricultural Marketing Agreement Act of 1937 in the USA, and the Primary Products Marketing Act 1936 in New Zealand. By the late 1970s about sixty-nine marketing boards dominated virtually all main agricultural commodities in Australia. In Canada, there were over 120 marketing authorities and in the United States over 100 authorities were administering marketing orders (Vinning 1980:1).

Marketing boards were also a prevalent form of marketing institution in developing countries, particularly in the 1950s, '60s and '70s. In Anglophone countries marketing boards were a legacy of the colonial power; the equivalent in Francophone countries was the *caisse de stabilisation*.

The first marketing authority in the South Pacific region was established during the second world war in Papua New Guinea. At that time the procurement of copra and rubber was seen as essential to the war effort and a control board was regarded as the appropriate form of intervention. The Australia New Guinea Production Control Board (ANGPCB) was established in 1943. This became the Copra Marketing Board (CMB) in 1952 which:

- validated the Acts of the Production Control Board;

- facilitated the control of copra necessary to meet a long-term contract with the United Kingdom; and
- defined the regulation clauses (Hasluck 1976:137).

Price stabilization was not a function of this board, but was subsequently introduced in 1954 under separate legislation which established the Copra Industry Stabilisation Board (CISB). The stabilization function was transferred to the CMB in 1974 under the Copra Marketing Board Bill.

Other South Pacific countries also adopted the marketing board approach. In Solomon Islands the Copra Board, which became the Commodities Export Marketing Authority (CEMA), was established in 1953; the Cocoa Marketing Board and Copra Marketing Board were formed in Western Samoa in 1973, as was the Tonga Commodities Board. The most recently formed marketing board is the Vanuatu Commodity Marketing Board (VCMB) which was established in 1982. All of these boards have been involved physically in the buying and selling of commodities.

Another form of marketing authority in the Pacific is the industry or regulatory board which controls or regulates production, processing, marketing and export of a commodity without getting involved in the physical marketing. The Coffee Industry Board and Cocoa Board in Papua New Guinea are regulatory boards; the former was established in 1963 under the Papua New Guinea Coffee Marketing Board Ordinance while the latter had its origin in the Cocoa Industry Act 1974.

Regulatory functions

Most governments in developing nations have sought to improve and facilitate the marketing of agricultural commodities and have turned to marketing boards in their various forms to meet this need.

Marketing boards have been established to strengthen the bargaining position of farmers, delegate government authority, buy out foreign ownership, stabilize prices, promote exports and regulate industry. Of these, industry regulation is one of the most important, but least understood (at least by some donor advisers), functions of marketing authorities. Through their regulatory powers, relating to market enterprises, processing facilities, quality and quantities of products offered for sale, boards can influence the composition and activities of the industry from the grower to the exporter.

In this chapter the regulatory functions of orderly marketing and quality control are examined in detail in relation to the Papua New Guinea Cocoa Board, but reference is made to regulations and their impact on the performance of the other boards in Pacific island countries where appropriate. This chapter will show that regulatory boards have effectively regulated agricultural export markets in the South Pacific, and have appreciated growers' interests and have out-performed other marketing enterprises. While privatization should be encouraged, it must be done in a controlled manner and regulatory boards can provide such control.

Orderly marketing

In Papua New Guinea regulation through licensing has been used effectively to create and maintain orderly markets.

Cocoa fermentaries and dealerships

As can be seen from the figures presented in Table 4.1, the Papua New Guinea Cocoa Board has pursued a liberal policy on licensing fermentaries and dealerships except where provincial governments have adopted a restrictive policy.¹

Two of the key regulations which control participation in the cocoa marketing chain are:

- the prohibition of dealing in dry beans to reduce the number of stages in the marketing chain; and
- the restriction of dealerships (under Clause 33 of the Cocoa Act, 1981) to nationals or nationally-owned companies in virtually all areas, preventing foreign-owned plantations from processing smallholder cocoa.

The Board also endorses a number of restrictions on the certificate of registration of fermentaries and dealerships to enforce standards and maintain quality.

Fermentary licence endorsements include the following restrictions:

- Only export quality cocoa is to be produced.
- All cocoa processing facilities are to be kept in a clean and hygienic condition, free of cocoa storage insects.
- Minimum fermentary production must be in excess of two tonnes export standard cocoa per annum.
- Fermentary numbers are registered in the name of the owner of the fermentary and are for the owner's use only. They must not be used by any other person.
- An unregistered fermentary must not be used to process cocoa beans.
- Annual re-registration is required, due on 1 October and effected by 31 December. Late registration may incur a penalty.
- Estimated annual output of dried cocoa beans must be calculated and entered on the application for renewal.
- The number of bags of cocoa beans produced during the previous year must be recorded and entered on the application for renewal.

Dealership licence endorsements also include a number of restrictions:

- Only cacao beans of good quality are to be purchased or received for fermenting.
- Fermented or fully processed beans must not be purchased.

¹ The East Sepik Provincial Government, for example, did not permit small-scale fermentaries and dealerships to be established until 1987 because of its commitment to the large-scale processing and marketing of the East Sepik Cocoa Growers Association.

Table 4.1 Registration of cocoa fermentaries and dealerships in Papua New Guinea

Locality	1977-78				1980-81			
	Fermentaries	Per cent	Dealership	Per cent	Fermentaries	Per cent	Dealership	
North Solomons								
Buin	478	29	77	18	555	35	203	
Kieta	169	10	43	10	245	16	110	
Buka	154	9	44	10	185	12	103	
East New Britain								
Gazelle	406	24	163	37	198	13	107	
Other	129	8	20	5	114	7	48	
New Ireland								
Namatanai	45	3	11	3	43	3	20	
Kavieng	41	2	15	3	26	2	10	
Konos	32	2	8	2	20	1	13	
New Hanover	10	1	5	1	10	1	6	
Madang								
Mainland	64	4	12	3	55	3	20	
Karkar Island	15	1	-	-	11	1	3	
West New Britain	53	3	19	4	45	3	29	
Morobe	27	2	4	1	21	1	6	
Milne Bay	6	-	1	-	7	-	3	
Oro	19	1	13	3	19	1	11	
Sepik	2	-	1	-	4	-	4	
Central	8	-	1	-	7	-	1	
Gulf	-	-	-	-	-	-	-	
Manus	6	-	-	-	15	1	6	
Total	1664		437		1580		713	
Per cent change					-5		61	

^aAs at 30 April 1989.

Source: Papua New Guinea Cocoa Board.

- Wet beans from immature pods and beans containing placenta or other foreign matter must not be purchased or received.
- Cacao or cocoa beans suspected of being stolen are not to be purchased.
- Only buying points which have been approved by the Cocoa Board inspector can operate.
- Wet beans must be placed in fermenting boxes within twenty-four hours of purchase.
- The dry bean storage area is to be kept insect free, and be of sound weather-proof construction.
- Daily prices paid for wet beans must be displayed in public at the fermentaries or approved buying points.
- Cocoa beans for sale must be fresh, clean wholesale beans extracted from only mature pods and free from all extraneous foreign matter.

1985-86				1988-89 ^a			
ntaries Per cent	Dealership Per cent			Fermentaries Per cent	Dealership Per cent		
2	36	472	34	545	25	223	22
4	20	324	23	461	21	220	22
3	11	187	13	236	11	121	12
7	11	130	9	339	15	129	13
7	7	75	5	211	10	72	7
6	2	19	1	45	2	32	3
2	1	8	1	16	1	10	1
1	1	17	1	14	1	9	1
0	-	8	1	5	-	5	-
7	3	53	4	87	4	49	5
3	1	3	-	14	1	2	-
7	3	44	3	84	4	50	5
4	1	17	1	28	1	19	2
4	-	1	-	26	1	1	-
2	1	17	1	44	2	24	2
3	1	13	2	37	3	28	3
4	-	-	-	4	-	2	-
-	-	-	-	3	-	3	-
9	1	13	1	26	1	13	1
5		1401		2225		1012	
8		99		-6		-28	

- Estimated annual purchase of wet cocoa beans must be entered on every application for renewal.
- The number of bags of cocoa beans produced during the previous year must be recorded and entered on every application for renewal.
- New dealerships must obtain a bank reference to verify their financial standing.

It is difficult to assess the impact these restrictions have on quality as other factors come into play. Examples include the vigilance of Department of Agriculture and Livestock (DAL) or Cocoa Board inspectors and, more recently, the vigilance of the exporters' cocoa assessors. However, in at least two cases changes in the Cocoa Board's licensing restrictions resulted in negative outcomes. For example, Livingstone (1989) recommended the government allow free dealing in wet beans. However, lifting restrictions on

fermentary and dealer licences in East Sepik Province, without adequate Cocoa Board inspection, resulted in a dramatic fall in quality (Table 4.2).

In a second case, as a result of the Cocoa Industry Investigating Committee's report on quality problems and cocoa stealing in the Gazelle area in 1987, the Cocoa Board imposed a ban on further dealer

Table 4.2 East Sepik cocoa export quality percentage: selected years

	Per cent
1985	98.6
1988 (Jan-June)	91.4
1988 (July-December)	88.8
1989 (January-May)	88.8

Source: Papua New Guinea Cocoa Board.

licences. However, as Livingstone (1989) pointed out, statistics indicating a rapid increase in licences in the Gazelle area actually disguised a high turnover of dealerships. As a result, the ban caused marketing problems and exacerbated quality problems in some villages.

The efficacy of the Board's licensing restrictions was demonstrated in 1986 when a number of overseas buyers complained of smoke-tainted cocoa. As all bags of cocoa exported from Papua New Guinea are identified by their fermentary number, the cause of the smoke problem was quickly traced to fermentaries with waterwide burners. Registrations of new fermentaries with waterwide burners were not accepted, and those fermentaries which had installed waterwide burners were given two years to phase them out. Instructions on operating waterwide burners were also given to minimize smoke contamination.

Cocoa and coffee exporters

At the export level both the Cocoa Board and the Coffee Industry Board in Papua New Guinea have pursued restrictive licensing policies.

As shown in Table 4.3, there were ten licensed cocoa exporters operating twenty-nine buying points in 1988-89. Cocoa exporting has been dominated by Angco Pty Ltd whose share has varied from 57 per cent in 1979 to 48 per cent in 1988. Rabtrad and New Guinea Cocoa have provided the main competition (Table 4.4), but in the past two years Rabtrad has been replaced by Agmark, a consortium of national groups, which has provided stiff competition to Angco. It is clear from the table that cocoa exporting is predominantly in the hands of national groups.

Table 4.3 Ownership and registered cocoa exporters in Papua New Guinea

Province	Angco ^a	New Guinea Cocoa ^{bc}	Itelex ^a	New Guinea Plantations ^{ad}	Agmark ^a Pacific Traders
East New Britain	HO	HO	HO	HO	HO
North Solomons					
—Buka	B	A			
—Tinuput	B	A			
—Kieta	B	B			
—Buin	B	A			
New Ireland					
—Kavieng	A				
—Namatanai	A				
Manus					
Madang	A	A			
West New Britain		A	A		
Morobe	B	B			
Oro	B				
East Sepik	B				
West Sepik					
Milne Bay					
Western					
Central					
Gulf					
Total					

Note: HO = Head office B = Branch A = Agency.

^a Producer-owned; ^b Majority; ^c Foreign-owned; ^d Restricted licence; ^e Joint venture.

Source: Papua New Guinea Cocoa Board.

Table 4.4 Cocoa exports by exporter: 1979, 1982 and 1988 (in thousands of tonnes)

Company	Rank	1988	
		Tonnes	Per cent
Angco	1	17,868	48
New Guinea Cocoa	2	11,282	30
New Guinea Plantations	3	2,677	7
Itelex	4	1,943	5
Pacific Trading	5	1,035	3
Rabtrad	6	1,012	3
NSPDC	7	705	2
BMC	8	570	2
Agmark	9	25	
NGIP	10	25	
Kamsco		-	
Total		37,142	

Source: Papua New Guinea Cocoa Board.

ea: head offices, branches and agencies, 1988-89

turu Palm ^{de}	BMC ^a	NSPDC ^{bf}	Milne Bay Estates ^{de}	Number ^c of branches /agencies	Output (1987-88)
				6	12,583
				11	12,903
	B HO	HO			
				2	1,042
					94
				2	1,710
				2	539
				2	340
				2	586
				1	1,611
			HO	1	248
					25
					118
					16
				29	31,815

Government-owned.

ty beans)

Rank	1982		Rank	1979	
	Tonnes	Per cent		Tonnes	Per cent
1	14,291	51	1	16,092	57
3	4,103	15	3	4,110	15
5	575	2	6	300	1
	-			-	
6	455	2	5	591	2
2	6,477	23	2	5,121	18
	-			-	
4	2,322	8	4	1,626	6
	-			-	
	-	8		10	-
	-	7		151	1
	28,223			28,001	

Ownership of coffee export companies, registered exporters and their market share in 1989 are shown in Table 4.5. Four additional exporters have been registered since that year.

No financial data are readily available to provide scale efficiency indicators for the structure of the export sector of the cocoa industry, as this sector exhibits a skewed distribution similar to the coffee export sector. However, comparable analysis for the copra industry by Fleming and Antony (Chapter 5) showed considerable scale economies which are likely to apply also to the cocoa industry. The conclusion of the Hassall Review (1982) on competition in the coffee industry is also likely to apply to the cocoa industry:

The extreme concentration within the exporting sector mitigates against effective competition. The smaller operators are probably making negligible contributions to the overall level of competition. Economies of scale within the sector suggest that three or at most four firms would be the maximum number consistent with efficient operation. Such a low number could be consistent with a high level of competition provided all had reasonable shares of the market and ownership and control was sufficiently dispersed.

Table 4.5 Ownership and registered coffee exporters, 1988–89

Exporter and registered head office	Bags (per cent)	Market share	Ownership
Angco – Goroka	428,988	33.6	Producer group
Coffee International – Goroka	173,569	13.6	Producer group
PNG Coffee Exports – Goroka	178,871	14.0	Producer group
Kundu Coffee Exports – Lae	59,270	4.6	Majority foreign owned (Harrison and Crossfield)
Cofex – Lae	76,765	6.0	Producer group
Namasu Coffee – Goroka	59,400	4.7	Producer group
Pacific Trading Co – Mt Hagen	28,024	2.2	Foreign-owned
Wahgi Mek Plantation – Banz	27,277	2.1	Local government council
Kamul Kopi Exports – Mt Hagen	48,956	3.8	Producer group
Panga Coffee – Lae	196,080	15.4	Producer group
Total	1,277,200	100.0	

Source: Papua New Guinea Coffee Industry Board.

Both Cocoa Board and Coffee Industry Board export licensing policies have come under attack from politicians in recent years. Both boards have issued policy guidelines to reduce political interference.

The Cocoa Board encountered political opposition to a decision to use its licensing powers to promote an increase in handling capacity. Export of cocoa (and coffee) is characterized by high overhead and low marginal costs in purchasing and selling; thus, volume of throughput is critical to profitability. In the early 1980s, the Cocoa Board encouraged exporters in North Solomons to upgrade their facilities to cater for expanding production. In return, the exporters demanded that registration of new exporters be restricted for several years. This was agreed to by the Board but the agreement was challenged by an application from the North Solomons Plantation Development Corporation (NSPDC), a joint-venture company between North Solomons Provincial Government and Berisfords, a major UK commodity trader. The Board was dissatisfied with the technical submission and stood firm by its undertaking with the exporters, but was overruled by the Minister of Agriculture. On three separate occasions it was requested to consider the NSPDC application.

The Coffee Industry Board, as indicated in the 1982 Hassall Review quoted above, limited the number of coffee exporters to three or four firms. The Hassall Review approved of this policy but the Coffee Industry Board, bowing to political pressure, subsequently approved seven additional exporting licences so that there are now fourteen licensed exporters (see Smith, Chapter 8 for details). This decision had implications for the distribution of International Coffee Organization (ICO) quotas among the coffee exporters. The original criterion for allocating shares of the ICO quota to Papua New Guinea was on the basis of

market share in the non-quota period. The new exporters received quotas, but on political criteria.

Copra regulation

The Copra Marketing Board (CMB) in Papua New Guinea, unlike the cocoa and coffee boards, has no regulatory control over the marketing of copra prior to its arrival at one of the Board's sixteen depots. Copra processing is a relatively straight-forward drying procedure which can be carried out effectively on a small scale in villages or on a much larger scale by plantations. Copra driers at the village level are frequently owner-operated but can be shared with relatives or group-owned.

The vast majority of Papua New Guinea copra is sold directly to the CMB. With improvements in road communications and transport, the role of expatriate traders and cooperatives has become insignificant. There are still copra-producing areas where road systems are poor and transport infrequent and the Board has come under pressure from both producers and politicians to establish depots or sub-depots in these areas. It has in most cases not bowed to such pressure, on four grounds:

- The amount of copra in these remote areas is too small to justify the cost of establishing and operating a depot or sub-depot.
- There is a shortage of qualified people or agencies with the necessary skills required to manage a depot.
- Communications and banking facilities are inadequate.
- The increased cost of operating these depots or sub-depots would, in any case, be passed on to the producers.

Quality control

As outlined above, board regulations (in particular, those of the Coffee Industry Board and the Cocoa Board in Papua New Guinea) are concerned especially with standards and maintenance or improvement of quality. Both cocoa and coffee are heterogeneous. In contrast copra is homogeneous and has little or no differentiation between grades. Quality is difficult to define in cocoa and coffee since several aspects, like taste and aroma, are subjective and virtually impossible to quantify.

Cocoa

Quality in the international cocoa trade is judged against certain standards, such as the International Cocoa Standards or the 'physical' standards of the Cocoa Association of London (CAL), the Cocoa Merchants Association (CMA) of the United States and the *Association française du commerce des cacaos* (AFCC). Although there is general agreement on international cocoa standards, its model ordinance and code of practice on how the standards should be applied, the majority of the world's cocoa is traded under CAL, AFCC or CMA contracts.

Table 4.6 Trends in cocoa export gradings in Papua New Guinea, 1977-78 to 1987-88

Year	Total all grades (tonnes)	Export		Non-export		Nibs (tonnes)	Residue (tonnes)	Total sub-standard grades	
		(tonnes)	(per cent)	(tonnes)	(per cent)			(tonnes)	(per cent)
1977-78	27,891	26,137	93.7	863	3.1	281	610	1,754	6.3
1979-80	30,768	28,432	92.4	1309	4.3	259	768	2,336	7.6
1980-81	27,123	25,700	94.8	778	2.9	193	452	1,423	5.2
1981-82	29,303	28,119	96.0	393	1.3	268	523	1,184	4.0
1982-83	29,410	28,115	95.6	388	1.3	262	645	1,295	4.4
1983-84	28,969	27,601	95.3	559	1.9	227	581	1,367	4.7
1984-85	32,644	31,352	96.0	421	1.3	288	583	1,292	4.0
1985-86	35,013	33,420	95.5	550	1.6	326	717	1,593	4.5
1986-87	39,966	38,862	97.2	468	1.2	334	302	1,104	2.8
1987-88	34,025	32,767	96.3	440	1.3	308	510	1,258	3.7

Source: Papua New Guinea Cocoa Board.

The situation is further complicated by the various future exchanges which have established their own grading standards to regulate premiums or discounts for each origin. Thus, the exchange standards determine the final billing price of a future contract delivery whereas the grading standards in the physical cocoa trade provide an assurance of the quality. In addition to the standards of the future exchanges, there are those manufacturers who have their own special requirements in addition to the standard market requirements. Several of these manufacturers' requirements are important to Papua New Guinea and Western Samoa because cocoa produced in these countries is regarded as fine or flavour, a type of cocoa used for blending with bulk cocoa in the production of premium or speciality chocolate.

Table 4.7 Trends in coffee export gradings in Papua New Guinea, 1981-82 to 1989-90 ('000 bags)

Year	Total all grades (vol.)	A/M		AB/B		C/PB		X
		(vol.)	(per cent)	(vol.)	(per cent)	(vol.)	(per cent)	
1981-82	739.9	82.5	11.2	17.7	2.4	2.3	0.3	120.2
1982-83	790.9	92.8	11.7	22.0	2.8	23.8	3.0	118.6
1983-84	952.9	81.5	8.6	23.8	2.5	1.7	0.2	155.9
1984-85	657.4	69.7	10.6	23.8	3.6	0.6	0.1	153.3
1985-86	868.2	80.8	9.3	27.8	3.2	1.0	0.1	183.7
1986-87	1,135.8	94.4	8.3	18.3	1.6	1.2	0.1	280.6
1987-88	642.4	64.6	10.1	7.2	1.1	0.8	0.1	170.3
1988-89	1,281.5	85.0	6.6	3.3	0.3	0.2	0.0	169.9
1989-90 ^b	244.0	49.3	20.2	1.0	0.4	0.5	0.2	39.7

^a Includes 47 bags soluble and 340,002 bags ungraded.

^b 1989-90 to December only.

Source: Papua New Guinea Coffee Industry Board.

Papua New Guinea has adopted the Food and Agriculture Organization of the United Nations (FAO) Model Cocoa Ordinance for Grade 1 but with several stricter standards (e.g. percentage of defective beans permissible). This grade is known as 'export quality'. Sub-grades are called 'non-export' (though exported), 'nibs' (the bean without the shell) and 'residue' (the shell and broken bits of nibs).

Trends in export grading of cocoa over the period 1977–78 to 1987–88 are illustrated in Table 4.6. It would appear from this analysis that quality has improved as the percentage of sub-grades of total exports has been decreasing. However, the Cocoa Board has disputed this conclusion because it believes the decline represents decreasing efficiency of the inspection system rather than improvement in quality, citing numerous lapses in this system over the years.

In comparison, Western Samoa cocoa quality has declined dramatically from its premium-enhanced level of the early 1970s but showed a modest improvement in 1981. Although Solomon Islands cocoa quality improved between 1976 and 1982, its performance has been variable.

It is interesting to note that until recently both Western Samoa and Solomon Islands did not promulgate cocoa regulations to support the commodity legislation. Lack of these regulations could be a factor in their poorer quality performance.

Coffee

Trends in the export grades of Papua New Guinea coffee are shown in Table 4.7. They indicate that there has been an improvement in the quality of export grades shipped. Grades of X and above have increased from about 30 per cent in 1981–82 to 38 per cent in 1987–88. The indications are that this trend is continuing into 1989–90, although the year 1988–89 is unreliable as the grading has not been finalized due to stock-holding. Of the lower grades, T has improved while Y grade has declined over the period of analysis.

Y		T		Roast and ground		Robusta		Other ^a	
(vol.)	(per cent)	(vol.)	(per cent)	(vol.)	(per cent)	(vol.)	(per cent)	(vol.)	(per cent)
449.2	60.7	25.9	3.5	-	-	42.0	5.7	-	-
461.6	58.4	23.1	2.9	-	-	48.9	6.2	-	-
592.3	62.2	43.9	4.6	-	-	53.7	5.6	-	-
363.4	55.3	19.7	3.0	0.1	-	26.9	4.1	-	-
469.1	54.0	42.9	4.9	0.1	-	62.7	7.2	-	-
625.7	55.1	53.4	4.7	0.1	-	62.1	5.5	-	-
346.6	53.9	29.0	4.5	0.3	-	23.6	3.7	-	-
620.2	48.4	30.5	2.4	-	-	32.3	2.5	340.0	26.5
122.5	50.2	17.9	7.4	-	-	13.0	5.3	-	-

While this performance is commendable, there is substantial scope for further improvement. In 1987–88, for example, only 12 per cent of total exports were plantation grade (AA and A, Ab and B and PB). Thus, 68 per cent of total exports were Y grade (54 per cent) or less, coming almost entirely from the smallholder sector. The establishment of community pulpers or central buying depots could perhaps improve quality.

Copra

In copra exports, it is internationally recognized that Pacific copra is of a very high quality and, more importantly to buyers, has a high oil content. The international price setting system, Federation of Oils, Seeds and Fats Associations Ltd (FOSFA), does not explicitly recognize differences in quality, but it is important nevertheless to ensure quality is maintained and improved where possible to ensure future access to particular markets. Three aspects which are important to quality are the absence of aflatoxin, fatty acid and carcinogenic factors.

Regular testing for aflatoxin and fatty acid should keep buyers satisfied but, with increasing consumer concern about carcinogenic substances, the boards have the regulatory function of discouraging the production of smoked copra because of its possible external costs brought about by cancer-causing properties. Apart from the risk of loss of markets, consumer concern might lead to discounting smoke grade substantially below other grades.

It has not been possible to present any trends in the grades of Papua New Guinea copra inspected because the Department of Agriculture and Livestock inspection figures are too unreliable. In 1985, for example, CMB purchases

Table 4.8 Comparison of Papua New Guinea average producer cocoa prices in selected cocoa exporting countries

Year	ICCO price (US\$/tonne)	Papua New Guinea average producer price (Kina/tonne)	Exchange rate (US\$/kina)	Papua New Guinea average producer price (US\$/tonne)
1971	538	356	1.1384	405
1972	642	358	1.1198	401
1973	1,130	720	1.4227	1,024
1974	1,559	1,087	1.4409	1,566
1975	1,245	838	1.3102	1,098
1976	2,034	1,184	1.2602	1,492
1977	3,788	1,973	1.2640	2,494
1978	3,401	1,708	1.4224	2,429
1979	3,291	1,742	1.4051	2,448
1980	2,602	1,513	1.4955	2,263
1981	2,076	1,521	1.4566	2,215
1982	1,736	1,568	1.3501	2,117
1983	2,118	1,708	1.1907	2,034
1984	2,396	1,910	1.1147	2,129
1985	2,254	2,013	1.0029	2,019
1986	2,068	2,002	1.0320	2,066
1987	1,996	1,920	1.1032	2,118
1988	1,584	1,597	1.1571	1,848
Average:				
1971–87	2,051	1,419		1,783
1975–87	2,385	1,662		2,071
1980–87	2,156	1,769		2,120

Sources: Papua New Guinea producer prices — Papua New Guinea Cocoa Board records;
Exchange Rates — Bank of Papua New Guinea;
ICCO price — Gill and Duffus Cocoa Market Report, June 1989;
Selected countries producer prices — Gill and Duffus Cocoa Market Report, June

differed from DAL inspection figures by a staggering 30,000 tonnes. Copra grades are not identified in exporting, and all copra is bulked regardless of its grading classification. In Vanuatu, however, copra quality has improved since the establishment of the VCMB in 1982 and the simultaneous implementation of a copra quality improvement project (Antony and Fleming, Chapter 2).

Prices

The success of the Papua New Guinea regulatory system can be gauged by comparing Papua New Guinea growers' returns with those in other major producing countries. Data presented in Table 4.8 demonstrate clearly that returns to Papua New Guinea cocoa growers are substantially higher than those to producers in any of the selected countries including Malaysia, the bastion of private trading. Data for Malaysia are only available for the period 1980 to 1987, a period coinciding with bounty payments for the Papua New Guinea cocoa producers. Even if the price to Papua New Guinea producers is adjusted for the

Table 4.8 International Cocoa Organization (ICCO) daily prices and producer

Brazil average producer price (US\$/tonne)	Cameroon average producer price (US\$/tonne)	Ivory Coast average producer price (US\$/tonne)	Ghana average producer price (US\$/tonne)	Malaysia average producer price (US\$/tonne)	Nigeria average producer price (US\$/tonne)
287	314	307	285	..	435
382	356	337	255	..	471
820	417	417	331	..	517
1,155	445	523	423	..	749
985	574	817	517	..	1,028
1,464	573	741	584	..	1,053
1,061	704	806	903	..	1,167
1,461	1,033	1,108	1,173	..	1,622
1,163	1,260	1,236	1,212	..	1,826
1,620	1,387	1,420	1,454	2,009	2,226
1,400	1,115	1,104	1,939	1,491	2,118
1,062	959	913	4,363	1,265	1,931
1,404	9,45	887	5,218	1,792	1,901
1,776	8,70	815	719	2,071	1,865
1,488	9,19	848	822	1,923	1,709
1,350	1,213	1,155	819	1,674	1,188
1,359	1,397	1,331	796	..	1,622
..	..	..	..	..	..
1,426	852	869	1,283	..	1,378
1,661	996	1,014	1,578	..	1,635
1,432	1,101	1,059	2,016	1,528	1,820

average bounty paid during this period (US\$372/t), the Papua New Guinea pricing system is still superior to the Malaysian system by US\$212/t. The Papua New Guinea system has therefore been one of the most efficient cocoa pricing systems in the world.

Efficiency of the system is maintained by closely monitoring prices, particularly the d.i.s. prices and exporters' contract prices. Papua New Guinea cocoa exporter margins are compared with margins prevailing in Solomon Islands and Western Samoa by Fleming and Antony in Chapter 3, and are shown to be much lower. Solomon Islands

has unrestricted private export marketing with CEMA providing little or no monitoring of prices and virtually no restrictions on the number of exporters. In 1988, there were seventeen exporters who purchased a total of 1700 tonnes from smallholders. As mentioned previously, export marketing is characterized by high overheads and low marginal costs in buying and selling; thus, high volumes are essential to maintain low margins.

The Cocoa Board in Western Samoa, on the other hand, was an example of a monopolistic marketing board with no regulations and declining efficiency of operations (Toelupe and Coulter, Chapter 13).

A number of different options to improve efficiency of this board and the Copra Board in Western Samoa were recently introduced, including the establishment of regulatory boards. Unfortunately, the Asian Development Bank appears to have been oblivious to these changes in its Program Loan assessment, and instead pressed for immediate privatization without any regulatory controls. Experience elsewhere, specifically in Africa, has indicated that abolition of marketing authorities has been followed by a rapid deterioration in quality and disorderly marketing when regulatory functions were ignored (Toelupe and Coulter, Chapter 13).

Conclusion

The main purpose of this chapter has been to demonstrate that regulatory boards have provided effective regulation of agricultural export markets in South Pacific island nations, have promoted the interests of producers, particularly with regard to grower prices, and have also promoted international trade through recognized and respected inspection and certification programs. These boards have appreciated growers' interests and the specific needs of their particular industry. They have out-performed other marketing enterprises, such as the private sector marketing of cocoa in Solomon Islands and the more traditional marketing board approach (of actually buying and selling the commodity) as with cocoa in Western Samoa.

Several marketing authorities in the South Pacific have become very inefficient, such as the Tonga Commodities Board and the Western Samoa Boards ('Akolo, Chapter 12; Fleming and Antony, Chapter 3; and Toelupe and Coulter, Chapter 13). Regulatory boards are an option which should be considered by agencies and governments as a means of privatizing these marketing arrangements in a controlled manner.

It must be remembered that perfect competition seldom exists in commodity marketing in the South Pacific, the volume of produce is limited, economies of scale in marketing are marked, and marketing expertise is limited. While privatization of marketing functions must be encouraged, it should be done in a controlled manner. It was not so long ago, prior to the formation of the boards, that growers complained about the large private companies which operated marketing oligopolies to the detriment of the growers. This is a likely result of privatization of marketing without appropriate regulatory controls.

CHAPTER 5

Cost analysis of copra export marketing in South Pacific island countries

Euan Fleming and George Antony

South Pacific economies are small. This smallness has a number of implications for economic activities, one of which is that the operations of export marketing organizations are prone to suffer from diseconomies of size. An argument in favour of marketing authorities in these small economies is that, as monopsonists and monopolists, they are able to realize what economies of size exist, or at least minimize the extent of diseconomies of size (Bae and Coulter, Chapter 10).¹

The problem of smallness in agricultural export marketing is illustrated in Figures 5.1a and 5.1b which contain the values of throughput in the years from 1960 to 1988 of the major agricultural exports of six Pacific island countries. Only in Papua New Guinea and Fiji (Figure 5.1b) are there export industries of sufficient size to reap substantial economies of size. The central issue in this chapter is the extent to which diseconomies of size exist in agricultural export industries in the Pacific islands and the impact on size efficiency of breaking up the monopolies of marketing authorities and introducing competition among a number of marketing organizations.

Economies of size are defined in this chapter as the total cost per unit of throughput of an export marketing organization. Economies of size exist when an expansion of output leads to a reduction in average total costs. An export marketing organization can be said to be suffering from *diseconomies of size* if it is

¹ Economies of size usually refer to gains made by lowering average costs which incorporate variations in relative input use. The term economies of scale is used when relative input shares are kept constant. It is not possible to distinguish between the two concepts in this study, and only the term economies of size is used.

Figure 5.1a Values of major export industries in four South Pacific island countries, 1960–88

Figure 5.1b Values of major export industries in Papua New Guinea and Fiji, 1960–88

Sources: National Centre for Development Studies, 'Statistical Annex', *Pacific Economic Bulletin* 5(2), Australian National University, December 1990; and various official publications of the statistical departments of the countries concerned.

operating at a level of throughput that is below the minimum possible long-run average total cost.

The commodity best suited to analysis of economics of size in South Pacific export marketing is copra (and, in some countries, coconut oil). In all five Pacific island countries which are the focus of this study, marketing authorities have had monopsonist buying and monopoly selling powers at the export marketing stage of smallholder copra and coconut oil. Furthermore, the marketing functions of the various marketing boards have been fairly similar, except for the complication of coconut oil processing. These boards are the Copra Marketing Board in Papua New Guinea, the Commodities Export Marketing Authority (formerly the Copra Board) in Solomon Islands, the Tonga Commodities Board, the Vanuatu Commodities Marketing Board and the Copra Board (recently disbanded) in Western Samoa. A description of the copra marketing boards in Papua New Guinea, Solomon Islands, Tonga, Vanuatu and Western Samoa is given by Antony and Fleming (Chapter 2).

Another source of economies is termed *economies of scope*. These economies are achieved by an export marketing organization when it can lower its average total cost by expanding the scope of its operations (i.e., by marketing additional commodities). Diseconomies of scope would exist in export marketing if a firm is operating with average total costs higher than would exist were it to add further commodities to the set that it already markets. Unfortunately, in the South Pacific export marketing is organized by commodity, preventing empirical work on the existence of economies of scope.

Cost components of copra marketing boards

A comparison of the cost structures of the five copra marketing boards mentioned in the previous section, plus the Coconut Board in Fiji, is given in Figure 5.2. Averages of cost components were estimated for Papua New Guinea and Solomon Islands from reliable annual data provided by the marketing authorities for the periods 1970–88 and 1974–87 respectively. Similar estimates were possible for Vanuatu, although the study period is short, 1985–89. Estimates for Tonga are derived from the accounts of the Copra Board over the period 1974–78. Only recent accounts, 1985–88, can be used for reliable cost estimates in Western Samoa.

As shown in Figure 5.2, there is a wide variation in the unit marketing costs. Papua New Guinea and Solomon Islands have the lowest levels, Western Samoa falls in the middle, while Tonga and Vanuatu are much higher than the others. Indeed, Vanuatu's average is six times that of Papua New Guinea. Fiji's Coconut Board has only a regulatory role which explains its lower unit costs.

Figure 5.2 Average copra marketing costs in six South Pacific island countries

Sources: Papua New Guinea Copra Marketing Board; Solomon Islands Commodities Export Marketing Authority; Vanuatu Commodities Marketing Board; Western Samoa Copra Board; Fiji Coconut Board; Tonga Commodities Board (all for 1988).

The differences among the boards call for further analysis.

Somewhat less reliable is the decomposition of total marketing costs into comparable categories. The cost items listed in the countries' reports are different, and our grouping of them into administration, marketing costs and agency fees may not have been consistent. A greater uniformity of the countries' individual cost items needs to be established before the cost components can be used in a statistical analysis. Nevertheless, some general observations can be made.

The two lowest-cost marketing boards, in Papua New Guinea and Solomon Islands, have the smallest administrative component and the highest component of agency fees. Their administrative costs compare reasonably well with the unit

costs of the Fiji board, considering that the latter has only a regulatory role. The proportion, as well as absolute size, of board administrative expenses in Tonga is very large, although hardly surprising, as it includes a portion of substantial board overheads. The absolute size of marketing costs alone in Tonga and Western Samoa exceeds the total costs in Papua New Guinea or Solomon Islands. Data for Vanuatu were not sufficiently detailed to enable the separation of marketing costs and agency fees, but these together are still considerable. However, the size of Vanuatu's costs is strongly influenced by recent figures, which reflect substantially reduced production and rising unit costs.

Method of cost analysis

Study period

Because of the different histories of the copra and coconut oil industries in each of the five countries, it has not been possible to use a common study period. Forty-eight observations on annual cost and throughput data covering the following periods were used:

Papua New Guinea	1970 to 1988
Solomon Islands	1974 to 1987
Tonga	1974 to 1978 and 1981
Vanuatu	1985 to 1989
Western Samoa	1985 to 1988.

Data were obtained from the published reports of the various marketing authorities included in the analysis. Cost data were converted into 1989 US dollars to enable observations from different nations to be pooled.

Hypothesis

The null hypothesis in this study is that copra marketing boards in the South Pacific do not experience diseconomies of small size in their marketing operations. The alternative hypothesis (that which is expected to hold) is that diseconomies of small size are experienced by all copra marketing boards. More specifically, these boards are expected to operate in normal years at a level of throughput that is on the downward part of their average total cost function.

The testing of this hypothesis relates only to the export stage in the copra marketing process. The analysis ignores the costs of various dealers operating at earlier stages in this process.

Dependent variable

The dependent variable in the study, as implied in the hypothesis statement, is the average total costs (operating, selling and administrative costs) of copra marketing: the total cost divided by the level of throughput for each annual observation.

Two alternative measures of average cost exist. First, average total cost is the sum of all variable and fixed costs divided by copra throughput. Second, average operating cost comprises only the costs necessarily incurred in copra marketing operations. The latter definition excludes capital costs that cannot be avoided if the board ceases to operate. It is the preferred definition, but lack of information on capital costs for some observations precludes it from being used in this study.

Some boards trade in other commodities in addition to copra. In these cases, only those operating costs associated with copra marketing are included, and administrative overheads are allocated on the basis of value of throughput.

Explanatory variables

Five explanatory variables were considered for inclusion in the estimated models.

Size of operations

The choice of the principal independent variable depends on whether the value or volume of copra throughput provides the best measure of size. Each has its advantages and disadvantages. The volume of copra traded (or its equivalent in coconut oil) should provide a guide to the size of operations of a copra marketing organization in that it measures the amount of throughput the organization has to handle. One factor it does not capture, however, is the extent to which size of operations has allowed organizations to reap the benefits of unit cost reductions in international freight charges. The f.o.b. values of copra exports, on the other hand, will reflect these factors. Therefore, it is desirable to use f.o.b. values of copra (and equivalent coconut oil) exports as an explanatory variable denoting size in addition to the volume of these exports. The major shortcoming of using f.o.b. values, however, is that copra price changes might indicate changes in the size of marketing operations over time when none had occurred. As this factor might cause misleading inferences to be drawn from the results, only volume of throughput is used as a measure of size of operations. The coefficient sign on the size of operations variable is expected to be negative throughout the range of observations. This indicates a downward-sloping average total cost function.

Another problem with using throughput volume is whether to use receivals or disposals. Given the ability of boards to hold stocks of copra or coconut oil for considerable periods, these two volumes can differ significantly. Disposals (measured as volumes of copra exported) were used as the sole measure of throughput for consistency. An average of receivals and disposals is probably the most satisfactory measure, but receivals data were not always available.

Marketing capacity	A second explanatory variable included in the cost equations is marketing capacity. This variable is measured by the value of fixed assets of each marketing organization in each year for which data on costs are available. The expected sign on this variable is negative, indicating that the larger the capacity of the marketing organization, the more able it is to keep marketing costs per unit of throughput low.
Age	The age of the marketing board is included as an indication of export marketing experience. The expectation here is that the longer a board has been operating, the greater the experience of the personnel and the greater the capacity to operate with relatively low costs. Hence, a negative sign is expected on the coefficient of this variable.
Time	A time trend variable is included to pick up trending in the dependent variable. In particular, it is hoped that general inflationary trends in the economies under study are taken into account with this variable. This being the case, a positive coefficient would be expected for this variable.
Marketing board dummy variable	<p>Finally, dummy variables are included to account for differences in cost-structures. Apart from size of operations, other characteristics peculiar to a marketing board may differentiate it from boards in other countries. These characteristics may allow the board to achieve lower marketing costs, or may cause it to suffer from relatively higher costs per unit of throughput. In particular, the Tongan and Western Samoan boards have experienced severe operational difficulties which are likely to cause them to have relatively high marketing costs during these periods.</p> <p>Two types of board dummy variables are tested for inclusion in the cost function regression models. First, intercept dummy variables denote higher (positive coefficient) or lower (negative coefficient) costs for a particular board for all levels of copra throughput. Second, dummy variables on the volume of throughput variables indicate whether a particular board has average costs that increase more or decrease less (positive coefficient), or increase less or decrease more (negative coefficient), than do average costs of other boards as volume of throughput increases.</p>

Relationship between copra prices and size of operations

As mentioned above, the use of volume of throughput as a measure of size prevents analysis of the effect of size on the international freight charges paid for copra exports. Therefore, a brief study is made here of the relationships between

f.o.b. prices of copra and size of throughput. While recognizing that there may be factors that cause differences in f.o.b. prices among Pacific island countries other than international freight charges, it is assumed that the effect of these other factors is small.

Potentially such factors are quality and geographical location. The fairly uniform nature of copra quality (with the exception of Vanuatu's, up to the early 1980s) means that quality variations are likely to have a minor impact on f.o.b. prices. As mentioned above, for the cost regression models board dummy variables are used to account for specific factors such as location which affect the f.o.b. prices one country receives relative to others. Country dummy variables were included on both the intercept and quantity variables.

Annual data were pooled for Papua New Guinea, Tonga, Solomon Islands, Western Samoa and Vanuatu, covering the period 1970–87. The data were obtained from the official statistical publications of the countries concerned. Autoregressive heteroscedastic models were specified following White (1987: Chapter 19). A log-linear model provided results of best statistical quality among the functional forms tested.

Results of the analysis are presented in Table 5.1. Less than one-quarter of the variations in f.o.b. prices are explained by this model. Significance levels are reported for one-tail t tests. Papua New Guinea was used as the base for estimation of dummy variables. A positive but insignificant sign on the coefficient for the quantity variable was found for Papua New Guinea, Solomon Islands and Vanuatu.

Table 5.1 Estimated relationships between copra f.o.b. prices and level of copra throughput

Variable		Coefficient	Significance level
ln quantity		0.02	0.29
ln quantity dummy	Tonga	-0.32	<.005
ln quantity dummy	Western Samoa	-0.60	<.005
Intercept dummy	Tonga	6.66	<.005
Intercept		5.86	<.005
Buse R^2		0.21	

Both intercept and quantity dummy variables were found to be significant for Tonga and Western Samoa. Tonga and Western Samoa were found to have significantly higher intercepts but significantly lower coefficients on the quantity variable. In fact, there appears to be a significantly negative relationship between f.o.b. prices and throughput levels in these two countries.

An important general result of this analysis is that it is not apparent that a larger throughput of copra enables a marketing board to achieve higher f.o.b. prices. Throughput seems to explain little of the variations in f.o.b. prices between countries and over time.

Cost analyses

Two cost analyses were undertaken. The first comprised all forty-eight observations across the five copra marketing boards which are the focus of this study. Second, an analysis was undertaken which only included observations covering the period 1974–87 for Papua New Guinea and Solomon Islands.

There were two reasons for undertaking the second analysis. First, these two countries account for most of the available observations. This provides an opportunity to make a detailed comparison of the cost structures of their copra marketing boards which have the lowest margins among the five countries (Antony and Fleming, Chapter 2).

Second, observations are obtained by pooling cross-sections and time series and, if ordinary least squares regression analysis is used, there are dangers of failing to account for differences in error variances across boards and autocorrelation within time series data for each board. It is possible to avoid these dangers by using the pooling option within the SHAZAM econometric package (White 1987: Chapter 19). This option enables the computation of a cross-sectionally heteroscedastic and time-wise autoregressive model. However, it can only be used for cross-sections with equal numbers of time series observations. The number of observations for common years in the other three countries is too small to warrant their inclusion in this analysis.

Five alternative functional forms were considered for use in studying the relationships between average total costs and volume of copra throughput. These were the linear, log-linear, semi-log, inverse and quadratic functional forms. For both estimated models described above, the log-linear functional form proved to be superior to the other forms in statistical quality. Models incorporating this relationship are reported in Table 5.2, along with the quadratic function for the ordinary least squares model which is of reasonable statistical quality and has some interesting results.

Ordinary least squares models

Results of the two ordinary least squares models reported in Table 5.2 show that they explain a good deal of the variations in average costs of the five copra marketing boards. The estimated models exclude the time trend and age of board variables which were found to be insignificant explanators of average board costs. Dummy intercept variables were included for Tonga and Vanuatu in the log-linear model indicating that these countries have higher than average costs; however, not much should be read into this estimate as only six observations were

Table 5.2 Estimated copra marketing average cost functions

Variable	Ordinary least squares model		Heteroscedastic autoregressive model
	(1)	(2)	
In quantity	-0.43 (-5.56)		-0.94 (-3.91)
Solomon Islands In quantity dummy	-0.01E-03 (-2.78)		
Solomon Islands Time dummy			0.06 (4.09)
Tonga intercept Dummy	0.47 (2.15)	39.78 (2.24)	
Vanuatu intercept	1.01 (5.49)	86.83 (5.31)	
Quantity		-0.0033 (-5.39)	
Quantity squared		0.128E-07 (3.72)	
Solomon Islands Quantity dummy		-0.00766 (-7.51)	
Tonga quantity Dummy		-0.01101 (-2.74)	
Western Samoa Quantity dummy		-0.01666 (-4.59)	
Intercept	8.20 (9.29)	229.39 (11.26)	14.32 (5.03)
Solomon Islands Intercept dummy			-1.88 (-3.77)
Adjusted R ²	0.80	0.78	
Buse R ²			0.48
Observations	48	48	28

Figures in parentheses are t values.

Figure 5.3 Average copra marketing cost function for five South Pacific island countries

Source: Authors' estimations.

included for the Tonga Commodities Board during the period 1974–81 and five for Vanuatu (1985–89). A dummy variable on the quantity variable was included for Solomon Islands observations in the log-linear model as average costs decline slightly more sharply as throughput increases than for other boards.

The most important result to report in the log-linear model estimate using observations from the five Pacific island countries concerns general size-cost relationships.² It is evident that average costs do decline with higher levels of throughput as the coefficient on this variable is negative (-0.43) and significant at the 0.05 significance level. The extent of the decline in average costs with increases in throughput (or economies of size) is illustrated in Figure 5.3. It is clearly quite substantial.

The quadratic model has been included to judge whether there are diseconomies of size associated with higher levels of copra throughput. The signs of the quantity and quantity-squared variable coefficients are consistent with such an occurrence. This is the standard U-shaped average cost curve. As indicated in Figure 5.4, the extent of this upturn in average costs is quite substantial within the levels of throughput experienced over the study period by the copra marketing boards. This upturn does not occur until over 100,000 tonnes throughput in Papua New Guinea, but occurs at much lower levels of throughput in other countries. Results were of insufficient quality to report for Vanuatu, probably because there are insufficient observations at relatively high levels of throughput when the average cost function is expected to turn upwards. Quantity dummies were insignificantly different from the base nation (Papua New Guinea) over the range of volumes of throughput in Vanuatu during the study period. This upturn in the average cost curve is dominated by observations from Papua New Guinea as no other nation has experienced throughputs at these levels.

² Solomon Islands results are discussed separately below because the functional form was found to be slightly different.

Average volumes of throughput for the years 1978–89 are shown in Figure 5.4. It is evident that these volumes have been less than the volumes at which average costs are minimized, with the exception of Papua New Guinea. Solomon Islands and Western Samoa have been operating on average at levels of throughput at

which average costs are close to their minima. In Tonga, however, average throughput has been only around one-half that needed to attain minimum average costs (10,000 tonnes compared with 20,000 tonnes). Adverse conditions induced by climate and the international market during some of this 12-year period explain these sub-optimal levels of throughput to some extent.

The volume of copra throughput in Vanuatu over the 12-year period averaged 38,500 tonnes. This average was exceeded in only one of the five years included as observations for Vanuatu in the regression analysis. This was in 1986 when throughput was around 42,000 tonnes, which was still about 6 tonnes below the highest level of throughput experienced. Hence, there have not been enough observations at relatively high levels of throughput to estimate accurately the upward-sloping portion of the average cost function for Vanuatu.

The unit costs of throughput for four Pacific island countries in 1988, as reported by Bae and Coulter in Chapter 10, are marked in Figure 5.4. They are very close to the estimated cost curves.

The small number of observations on average costs and throughput relations in Tonga, Vanuatu and Western Samoa means that caution is needed in interpreting estimates of their average cost functions.

Heteroscedastic autoregressive model

Results for the heteroscedastic autoregressive model featuring a log-linear relationship are reported in Table 5.2. Included variables are significant at least at the 1 per cent level, and around half the variation in the dependent variable is explained by the model on the basis of the Buse R^2 calculation.

The heteroscedastic autoregressive model estimates are generally supportive of those reported above for the ordinary least squares model. In contrast to the

Figure 5.4 Average copra cost functions for four South Pacific island countries, 1988

Source: Authors' estimations.

latter, however, this model does have a significant and positive time trend variable, but only for Solomon Islands which experienced higher rates of inflation than Papua New Guinea over the study period.

One feature of the model is the higher cost elasticity of throughput. At 0.94 it is more than double that for the ordinary least squares model, and demonstrates

the existence of substantial economies of size. The extent of these economies in Papua New Guinea and Solomon Islands is clearly shown in Figures 5.5 and 5.6, respectively.

No results are reported for the quadratic model for the heteroscedastic autoregressive model. In brief, the estimated model was of inferior statistical quality to those models reported in Table 5.2, and the coefficients of the quantity variables were insignificantly different from zero at the 10 per cent significance level. This result, which is based on the use of a more rigorous econometric method, casts some doubt on the validity of the results from the quadratic model using the ordinary least squares regression procedure.

Figure 5.5 Papua New Guinea copra average marketing cost function

Sources: Authors' estimations.

Figure 5.6 Solomon Islands copra average marketing cost functions

Sources: Authors' estimations.

However, the poor results might also be due to the much smaller number of observations used in the regression analysis. The relative statistical merits of the functions derived for the ordinary least squares model using all forty-eight observations were assessed using a *j* test. The results of this test indicated that the quadratic form is slightly preferable to the log-linear form, although the results are not unequivocal.

The major difference between the log-linear models reported in Figures 5.5 and 5.6 is the point at which most economies of size are reaped. This occurs in Papua New Guinea between 100,000 tonnes and 150,000 tonnes (Figure 5.5). In Solomon Islands, it occurs at around 25,000 tonnes (Figure 5.6). Mean throughput levels, and throughput levels one standard deviation each side of the mean, are shown in these two diagrams for the two countries. Given their organizational structures, boards in both nations are operating most of the time on a fairly flat part of their operating cost curves. That is, the null hypothesis holds, and there are no significant diseconomies of small size. It also appears, however, that they could handle levels of throughput well in excess of the mean without incurring any large diseconomies of size.

As indicated above, a separate quadratic function is also included in Figure 5.6 for Solomon Islands. Two points of comparison are worth making. First, while the curves are reasonably similar around the average level of throughput, they can vary quite substantially at the extremes, where there are few observations on which to base estimates of the function. Because choice of functional form can lead to different interpretations about cost-throughput relations in these areas, some circumspection is called for when drawing conclusions about the extent of economies and diseconomies of size. Second, the quadratic function gives a higher level of average costs within the bounds of 1 standard deviation than does the log-linear function.

Implications for the structure of copra export marketing ---

The major implication to flow from the results of this study is that economies of size are present in copra export marketing in the five South Pacific island countries studied. These economies are quite substantial, with the cost elasticity of throughput most likely in the range 0.45 to 0.94. Although the model from which the higher estimate came contained fewer observations, it is probably the more reliable estimate because a more rigorous econometric procedure was used to estimate this model.

An important practical issue is the determination of the level of throughput at which most economies of size can be realized. This appears to vary among the countries, and is probably influenced strongly by the organizational structure. The larger the organization, the more likely it is that there will be higher overheads which mean that economies are reaped at higher levels of throughput. This appears to be borne out by the results. Economies are still being

achieved at up to 100,000 tonnes throughput in Papua New Guinea whereas most economies have been attained in Solomon Islands with a throughput of 30,000 tonnes.

Policy implications

What can be inferred from this finding for policy making with respect to marketing authorities? The acceptance of the null hypothesis, that the boards in Papua New Guinea and Solomon Islands do not suffer from diseconomies of small size, is instructive. It indicates that marketing firm structure is flexible enough to enable the boards to take advantage of any size economies that exist. As demonstrated in Figure 5.3, potential size economies are smaller for boards with lower levels of copra throughput, and diseconomies of size appear to become very great at levels of throughput below 5,000 tonnes. Yet a comparison of minimum average costs for Papua New Guinea and Solomon Islands (Figures 5.5 and 5.6) reveals little difference. This finding appears to be in conflict with observations made elsewhere (e.g. Bae and Coulter, Chapter 10) that average copra marketing costs are considerably lower in Papua New Guinea. Further analysis is needed to resolve this matter, but one major explanation alluded to above is that Solomon Islands experienced a below-average throughput in 1988 which greatly exaggerates its minimum average cost.

There is a *prima facie* case for monopolies, or at least for limiting copra exporting to a small number of firms, to take advantage of the economies of size that do exist. This is essentially a continuation of current policy. However, other factors need to be taken into account before a definitive recommendation can be made to this effect.

First, there are viable forms of monopoly or oligopoly other than marketing authorities. These include private corporations, such as those operating in the Papua New Guinea cocoa and coffee industries under the watchful eyes of industry boards, and marketing cooperatives with a hierarchical structure which extends down to the village level. It is beyond the scope of this chapter to compare the relative merits of these organizational structures. Suffice it to say that, even if it is advantageous to have a monopolistic or oligopolistic structure in copra export marketing, it does not follow automatically that this is best achieved through marketing authorities.

The second point that needs to be made is that size efficiencies are only one element of marketing efficiencies. Other aspects of efficiency—allocative, technical, locational, technological and scope—also need to be considered. We have no information on these other aspects, and so cannot conclude that they are outweighed by economies of size. In the case of scope efficiency, it might be possible for private marketing firms already operating in the agricultural marketing system to add a commodity under marketing authority control to their portfolio. This might enable these firms to achieve further economies of scope in addition to economies of size.

Third, and related to the issue of technological efficiency, it has only been possible to judge economies of size in relation to marketing authorities. The extent to which they exist in other organizational forms, which may combine factors of marketing in different ways, remains an unexplored issue. The differences in the cost relationships shown by Papua New Guinea and Solomon Islands demonstrate this point. However, to reiterate, further work is needed to determine whether the potential size economies are as great for smaller firms.

Finally, one form of gain from size is the ability to reduce international freight charges. This was not included in the cost functions reported in Table 5.2, but was part of a separate simple analysis in an earlier section. It appears that there is little if any evidence that higher volumes lead to higher f.o.b. prices. In fact, the relationship for three of the Pacific island countries in this analysis is significantly negative. More quantitative work is needed on these relationships before a definitive statement can be made, because other factors influencing f.o.b. prices not accounted for in the estimated models might be confounding the results.

The exclusion of the age of board variable indicates either that experience in copra export marketing is not well captured by this variable or that it is not a relevant factor in influencing marketing costs. Indicative of the failure of this variable to explain average total copra marketing costs is the fact that the recently-established Vanuatu Commodities Marketing Board has been able to operate with reasonably low costs compared with the long-established copra boards in Tonga and Western Samoa. This result is more consistent with the tenet that monopolies tend to become complacent in the long term unless they are placed under pressure to perform. The spotlight has been on the Vanuatu Commodities Marketing Board during the short period it has operated. Similarly it appears that average costs were reduced in Tonga and Western Samoa when new management was introduced in the mid-1980s.

CHAPTER 6

A critical view of the case for commodity stabilization schemes in the South Pacific

Euan Fleming

One argument often made to justify the existence of agricultural marketing authorities in the South Pacific is that they are best placed to discharge the function of commodity stabilization. Ilala (Chapter 14) argues for stabilization in commodity export markets, particularly in Solomon Islands, but also in other countries in the South Pacific. The purpose of this chapter is to provide arguments contrary to those offered by Ilala. Specifically, it is shown that stabilization, on balance, does not contribute to the welfare of participants in the agricultural sector, does not contribute to economic development, and is not a sound argument for the existence of marketing authorities.

Ilala argued his case on 'pragmatic policy' grounds, and appears to quote Anderson, Hazell and Scandizzo (1977) favourably to support this approach. Yet close reading of this article does not offer much support. Anderson *et al.* (1977:909) stated that '... policy makers should not be too easily seduced by the apparent gains and feasibility of price stabilization schemes'.

This chapter evaluates the impact of stabilization at the micro, macro and regional economic levels. The evaluations are limited to buffer fund stabilization schemes which focus on export prices because this is the only major form that stabilization schemes have taken in the agricultural sectors of the South Pacific. It will be shown at each of these levels that commodity stabilization schemes are an ineffective and inefficient means of reducing the impact of commodity price fluctuations on Pacific island countries and that stabilization is a poor justification for the existence of marketing authorities.

Macroeconomic stabilization

This section will show that commodity stabilization schemes are largely ineffective in offsetting fluctuations in the macroeconomy. First an analysis of the impact of commodity export stabilization on macroeconomic stability is presented. Second, alternative means of achieving economic stability are reviewed.

Four issues should be considered in evaluating the impact of agricultural commodity price stabilization on macroeconomic stability. They are:

- whether the degree of macroeconomic instability caused by instability in commodity export markets is inimical to economic development;
- the importance to the whole economy of the agricultural commodities for which stabilization schemes are established;
- the strength of linkages between the agricultural sector and the whole economy; and
- the extent to which price stabilization is translated into revenue stabilization.

Macroeconomic stability and economic development

Guest (1985) neatly summarized the situation faced by South Pacific island governments attempting to achieve macroeconomic stability. South Pacific island nations are open economies, depending on imports and foreign capital, with large primary sectors which export to unstable world markets. The public provision of goods and services accounts for a large share of domestic output. His first premise—a vitally important one—is that the macroeconomic performance of these countries is greatly influenced by what happens in their external sector.

Disturbances emanate largely from abroad, as fluctuations in the prices of primary commodity exports, or in the flow of foreign aid, or in private foreign investment or transfers. The balance of payments provides the mechanism by which these disturbances are transmitted to the domestic economy (Guest 1985:1). He argues that the success of macroeconomic policies depends on the policy frameworks to withstand disturbances transmitted through the balance of payments.

Guest implicitly recognizes that there is a continuing debate in the development literature on the relationship between instability and economic growth. However, he argues that South Pacific island nations are a special case because the causes of instability are largely beyond the control of domestic policy instruments. He argues that the 'effects are so strong that they can seriously disrupt progress towards a desired rate of development' (Guest 1985:17). Fiscal policy is seen as inadequate to deal with imported instability, its scope is limited by import leakages and the high proportion of foreign exchange in the reserve assets of the banking system. If domestic stabilization is to be

effective, it must operate directly on the incomes immediately affected by the export instability.

Importance of stabilized commodities in the economy

The impact of commodity stabilization schemes on macroeconomic stability depends on the relative contributions of exports of these commodities to the balance of payments. Figure 6.1 shows the percentage contributions to current account inflows over the five-year period 1984-88 of agricultural commodity exports for which stabilization schemes exist in Papua New Guinea, Solomon Islands, Tonga, Western Samoa and Vanuatu. Average percentage contributions are small, varying from 19 per cent in Papua New Guinea to only 4 per cent in

Figure 6.1 Stabilized agricultural exports as a percentage of external receipts: five South Pacific countries, 1984-88

Source: National Centre for Development Studies, 'Statistical Annex', *Pacific Economic Bulletin* 5(2), Australian National University, December 1990.

Tonga. It is hard to believe that these stabilization schemes have much effect on macroeconomic stability. In Papua New Guinea, the nation with the highest proportion of contribution, Jarrett and Anderson (1989:68) found that 'agricultural stabilization funds are doing little to offset fluctuations in the macro-economy'.

Furthermore, trends indicate that these stabilized commodities are becoming less important over time and the prospects for expanding the number of commodities for which stabilization schemes exist does not seem very good. Agricultural exports as a whole are a shrinking proportion of total exports, and efforts to diversify into new agricultural export commodities have so far met with only limited success (see Chapter 2).

Three other factors could reduce the effectiveness of stabilization schemes even further. First, at best these schemes attempt to remove only some of the variation in revenue brought about by price fluctuations. A study by Hardaker and Fleming (1986) indicated that the variance of producer prices of copra during the period 1974-84 was approximately 30, 33, 40, 60 and 62 per cent of that of f.o.b. prices in Solomon Islands, Vanuatu, Western Samoa, Fiji and Tonga, respectively. However, Jarrett and Anderson (1989) found in Papua New Guinea

that stabilization dampened fluctuations in the producer price of coffee exports by only 16 per cent during the period 1976–86. The difference might be explained by the fact that private marketers also take up some of the variability in f.o.b. prices, a point which is discussed below. Ilala (Figure 14.1) confirms that actual copra price stabilization in Solomon Islands from 1972 to 1987 was much less than the desired level.

Second, the scheme managers are not omniscient and operate, like the producers, in an uncertain environment. As pointed out by Jarrett and Anderson (1989:71), market uncertainties lead to conservative price setting rules in the schemes. Further, scheme managers could misjudge price trends and run out of funds in periods of extended low commodity prices, something that has recently happened in most South Pacific island nations (e.g., see Chapter 11 by Gimbol describing the cocoa stabilization scheme in Papua New Guinea). Recent events in the Australian wool industry are a sobering reminder of this possibility. This situation is likely to be even more destabilizing to a South Pacific island economy than the price fluctuations themselves.

Piggott, Fleming and Kunert (1986) demonstrated how choice of a different time period on which to base stabilized price can influence the causes of revenue instability. Using as an example Western Samoan copra exports for fourteen decades commencing 1961 to 1974, they showed that the relative importance of demand, supply and interaction effects on copra export revenue variability altered enormously.

The difficulties in operating a price stabilization scheme without perfect knowledge of future world market prices can therefore be great, but this is usually not acknowledged by proponents of such schemes. Ilala (Chapter 14) implicitly recognizes such difficulties exist, but the general tenor of his prescriptions for a properly operating stabilization scheme underplays their extent and highlights a major anomaly when he is establishing the key principles that should be considered. He states, for example, that 'the stabilization mechanism should be based on automatic formulae'. Yet earlier he acknowledges that 'if there has been a major change in the price trend, this should be reflected in the threshold price'. It is not obvious that scheme managers will know when a major change has occurred in the price trend, and whether or when they should abandon the automatic formulae.

Third, sometimes there are negative revenue covariances between commodity exports, which means it is conceivable that stabilization of export revenue from one commodity could destabilize overall export revenue. Such a situation arose, for example, during the period 1976–83 in Solomon Islands (Fleming and Piggott 1989).

Strength of linkages between agriculture and the rest of the economy

Fritz-Krockow (1989) studied the link between the monetized and subsistence economies in Solomon Islands. He concluded that a temporary monetization of economic activities in the subsistence sector can have a significant effect on the

demand for money in the macroeconomy arising from an increased pecuniary demand for goods and services.

The analysis was focused particularly on the changing economic fortunes of the copra industry. Fritz-Krockow found that a decline in copra price combined with a decline in expected real non-copra income led to negative growth in real money demand in 1981–82. The decline in expected real non-copra income was argued to be related to the fall in copra price because of the links between the copra industry and non-copra commercial and trading activities. Increased copra prices in 1983–84 were found to have the opposite effect, creating strong growth in money demand in that period, a process that was reversed when copra prices again fell after 1984.

Price versus revenue stabilization

As pointed out by many analysts of price stabilization schemes in the South Pacific (e.g. Piggott *et al.* 1986; Fleming and Piggott 1989; Jarrett and Anderson 1989), price stabilization does not automatically translate perfectly into revenue stabilization. Piggott *et al.* (1986) presented some interesting analytical results that demonstrated that price effects are likely to be partly, even wholly, offset by demand-supply interaction effects. They examined copra export revenue instability for the period 1961–83 in Tonga, Vanuatu and Western Samoa. With demand effects normalized on 100, the respective supply and demand-supply interaction effects for ‘best-guess’ export demand and supply elasticities (infinity and 0.3, respectively) were estimated at 36 and -103 for Tonga, 7 and -35 for Vanuatu, and 15 and -33 for Western Samoa. Furthermore, as pointed out above, it is difficult for operators of stabilization schemes to know in advance how the relative contributions will change in the future.

Alternative means of achieving macroeconomic stability ---

This section reviews three (not mutually exclusive) potential alternatives to commodity price stabilization schemes as means of achieving greater macroeconomic stability: government fiscal policy; government monetary policy; and reliance on international stabilization assistance.

Stabilization through fiscal policy

Rather than operate stabilization schemes for individual commodities, South Pacific governments could set up a system of export taxes in periods of high commodity prices and subsidies in periods of low commodity prices, with sterilization of funds accumulated in periods of high prices. Guest (1985:18) acknowledged this alternative, then dismissed it because ‘such a system could give rise to substantial problems in budgetary management’. His argument seems to be that budgetary matters are far too important to be left to government! If this is indeed so, stabilization schemes might merely serve to

distract attention from much more urgent budgetary management reform. Further, he implies that political interference can prevent proper macroeconomic management but not proper management of stabilization funds. Recent evidence in some South Pacific island countries indicates this is not so.

Guest has shown that fiscal policy is ineffective as a means to achieve domestic stabilization, but can have a substantial direct impact on the balance of payments. He describes an appropriate fiscal policy, while stressing that its limitations mean it is of little effect as a weapon against wide fluctuations in current account receipts.

Stabilization through monetary policy

The study by Fritz-Krockow (1989) demonstrated that the demand for money is influenced by the links between agriculture and the rest of the economy, and that monetary growth translates into general price increases and has a significantly negative impact on economic activity. He surmised that this may be due to the structure of the financial market where financial assets are more likely to be used for transactions than investment.

Given these relations, what is the best way of stabilizing the monetary sector? In their study of the Papua New Guinea economy, Jarrett and Anderson (1989:67) found that, since 1975, broad money supply has changed very little as a result of commodity stabilization schemes. With the exception of the period of high coffee prices in the late 1970s, the change has been less than 5 per cent. They concluded that agricultural stabilization schemes have had little impact on broad money supply. The situation in other Pacific island countries has almost certainly been similar.

A sound monetary policy, with appropriate sterilization of funds in times of high commodity prices and drawing upon reserves in times of low prices, is a 'first-best' solution which is preferable to commodity stabilization schemes in dealing with changes in money demand, provided the changes are within reasonable bounds. The relatively small and declining external receipts that derive from agricultural exports mean that this situation almost certainly holds. However, there are limits to the effectiveness of monetary policy in small nations given the chronic use of financial assets for transactions rather than investment. Therefore, use of monetary policy as a stabilization measure needs to be accompanied by financial reform which encourages greater domestic saving and investment in times of high commodity prices.

Fritz-Krockow pointed out that the impact of import price changes upon general price levels is high. These changes are of greater concern than changes in copra prices in influencing monetary stability in South Pacific island nations, yet policy makers do not attempt to stabilize the effects of these changes.

As with fiscal policy, if governments do not adopt sound monetary policies, stabilization schemes may camouflage the need for fundamental policy reform, and delay its implementation.

International stabilization assistance

The International Monetary Fund's (IMF) Compensatory Financing Facility provides South Pacific island governments with a sound way of handling temporary revenue instability. It operates by enabling a nation to draw on IMF funds in times of shortfall in the external account. The operations of the facility in the South Pacific are described by Reddy (1984), Guest (1985) and Falvey (1986).

The Stabex scheme operated by the European Community (EC) is another option available to help Pacific island governments deal with temporary shortfalls. Gross Stabex transfers to the South Pacific over the period 1975–85 were summarized by Falvey (1986:17). Stabex funds have the advantage of being grants rather than loans for some countries and at least loans on concessionary terms for others; however, they have been criticized as being received too late to be useful for the purpose of revenue stabilization for which they are given. That is, they sometimes exacerbate cyclical fluctuations rather than act in a counter cyclical fashion. It should be pointed out that this can also occur in commodity stabilization schemes.¹ Who is to blame for this situation is difficult to ascertain. Governments blame the tardiness of the EC in processing applications and making grants, while EC officials blame delayed submissions by Pacific island governments.

Microeconomic stabilization

Four issues are discussed in this section. They are the impact of export price stabilization on:

- the welfare of producers of agricultural export commodities, including income distribution among them;
- the savings capacity of smallholder exporters;
- investment and maintenance decisions of producers of export commodities; and
- resource allocation in the agricultural sector.

Impact of export price instability on producer welfare

Stabilization for producer welfare was succinctly argued by the South Pacific Commission (1980). Most farmers in the South Pacific operate on a small scale and are from poor households. Commodity export price fluctuations will often cause fluctuations in real incomes that these households find detrimental to their economic and social welfare.

1 According to Jarrett and Anderson (1989), there has been a mismatch of changes in export earnings and stabilization funds in Papua New Guinea and moves to alter levies have lagged well behind changes in commodity prices.

The argument that commodity price stabilization schemes increase producer welfare has been disputed by Jarrett and Anderson (1989). These authors argue that the impact on export revenue is not great, and there are costs to producers associated with stabilization. First, in respect of the impact of the schemes on export revenue, the South Pacific Smallholder Project results are revealing (Hardaker, Delforce, Fleming and Sefanaia 1988; Jones, Fleming and Hardaker 1988). They show that the extent to which producers' incomes are stabilized will vary widely among producers. Those most likely to rely heavily on commodity export receipts are also likely to be the most wealthy, and best able to withstand revenue fluctuations. The smaller, potentially more vulnerable producers are more likely to be among those who rely on a diverse set of income-earning sources, including subsistence activities and off-farm sources. They are therefore less affected by instability. For example, Fleming and Piggott (1989) give details of sources of income in four villages in Tonga: household income derived from agricultural exports was not greater than one-quarter, and not all of that came from activities for which stabilization schemes exist.

The argument that stabilization schemes are the best way to raise producer welfare by reducing risk implies the state (through those responsible for operating stabilization schemes) knows better than the individual how best to manage risk. This proposition is debatable. Most smallholder households in the South Pacific producing for export markets appear to have a well-articulated set of strategies to minimize their exposure to market risk (and, indeed, yield and institutional risk). There is no evidence that the state has an intimate knowledge of smallholders' risk attitudes, and what a smallholder regards as an 'acceptable' level of variability in commodity prices.

A related point to note here is that the emphasis in the rationale for stabilization schemes is focused on the welfare of small, poor producers, yet stabilization schemes are mandatory for all producers of a particular export commodity. It is likely that many larger-scale producers do not gain from these stabilization schemes, and would rather opt out of them.

Another issue that raises doubts about raising producer welfare from export price stabilization concerns the relations between marketed surplus and price, which can vary among producers. Fleming and Piggott (1989) pointed to a potential anomaly if there is a group of producers whose marketed surplus is negatively correlated with industry-level marketed surplus in the short run.² Payments from the stabilization fund would correspond to the 'large surplus' years of this group, while levies would correspond with 'small surplus' years. Hence, stabilization could have a destabilizing impact on their incomes.

This example is part of a more general concern about temporal inequity. Deterioration in producer welfare could be brought about because contributions by individual producers to stabilization funds are unlikely to match their receipts (Fleming and Piggott 1989; Jarrett and Anderson 1989). This could be of

2 Note that this is not the same as arguing that this group has a perverse supply response function, as implied in Figure 13.1 by Toeluepe and Coulter.

particular concern if it meant that smallholders received less relative to what they were levied while largeholders received more. Two empirical studies (Fleming 1988b; Mwesigye 1989) indicate that this does occur because smallholders tend to have higher elasticities of supply than largeholders. That means smallholders contribute relatively more in times of high prices—when levies are paid—and receive relatively less in times of low prices—when money is paid out of the fund. These two studies indicated that the net transfer from smallholders to largeholders is not substantial, but the fact that it happens at all is a matter for concern.

Oi (1961) demonstrated that with a price elasticity of export supply greater than zero, price stabilization will cause a reduction in producers' net income. There is evidence that elasticities of all stabilized agricultural export commodities in the South Pacific are indeed greater than zero (Fleming 1988a; Mwesigye 1989). Jarrett and Anderson (1989) pointed out that the trends in producers' incomes in Papua New Guinea have been lowered by stabilization as a result of the accumulation of stabilization funds. Ilala (Chapter 14) found the opposite result for copra stabilization in Solomon Islands over the period 1972–87, citing an average stabilized price of SI\$251/tonne with stabilization and SI\$244/tonne without, but three factors could invalidate these results.

First, Ilala refers to average price over this period, but revenue is the important variable to compare. A comparison of stabilized and unstabilized prices biases results against the unstabilized situation. That is, he weights prices equally for each year in the study period. Yet revenues are likely to be relatively higher with high prices in the unstabilized situation because more copra would be supplied. The lower level of supply response in the unstabilized situation at low prices would not offset this difference (Oi 1961), a point clearly made by Jarrett and Anderson (1989: Figure 5.3).

Second, information would be needed on what has happened to stabilization funds over this period. If there has been a net run-down of funds, this would bias results against the unstabilized situation and vice versa for a build-up in funds. Stabilization funds stood at SI\$3.2 million at the end of 1987 compared with SI\$0.8 million at the end of 1972. Thus, there has been a build-up of funds in nominal terms, so the difference between average stabilized and unstabilized prices has been under-stated (but see the next point).

Third, prices need to be compared on a common basis. Comparing 1972 prices with 1987 prices is comparing unlike items. The final four years in the study period are illustrative of the difficulty of trying to compare prices over time, this time showing how the purchasing power of the local currency can change. In 1984 when unstabilized prices were SI\$115/tonne above stabilized prices, SI\$1 would buy US\$0.79. By 1987 when stabilized prices were SI\$105/tonne above unstabilized prices (over 90 per cent of the 1984 difference), SI\$1 would buy only US\$0.50. In US\$ terms, stabilized prices were US\$52.50 above unstabilized prices in 1987, only 58 per cent of the US\$91 by which unstabilized prices exceeded stabilized prices in 1984. Re-examining the

end-1972 and end-1987 stabilization funds but in real terms (general prices in Solomon Islands in 1987 were 466 per cent higher than end-1971), the respective figures, in 1987 SI\$, are \$3.3 million and \$3.2 million.

Finally, there is an underlying assumption made by proponents of stabilization schemes that private export marketers would not stabilize prices paid to producers. That is, they would not take relatively lower margins when world commodity prices are low and relatively higher margins when prices are high. This is an interesting empirical question that has not been satisfactorily answered in the South Pacific, probably because, except for Vanuatu, there are few countries where such a comparison could be made.

In Vanuatu private traders were replaced by the Vanuatu Commodities Marketing Board (VCMB) in 1982. On the limited evidence available, the effectiveness of the VCMB in reducing the variability in c.i.f. prices to producers was little different from that of the private traders (Hardaker and Fleming 1986). Some evidence can also be gleaned from results presented in Chapter 3 on the relations between margins and f.o.b. prices for copra and cocoa in various Pacific island countries. These results indicate that, as a general rule, both private exporters and marketing authorities tend to take higher margins in times of high f.o.b. prices and lower margins when f.o.b. prices are low, thereby having some stabilizing impact on producers' prices outside the operation of stabilization schemes.

Impact of export price instability on savings

There is a lack of evidence on the relationship between export revenue instability and savings in Pacific island countries. However, it might be that savings of agricultural producers are potentially greater with higher levels of instability. Observers point to anecdotal evidence on lack of savings and high consumption levels in times of high commodity prices. There is a compelling reason why this might be so: there is little or no incentive to save, there is a dearth of saving facilities in many rural areas, and producers are commonly faced with negative real interest rates. It is little wonder producers spend what they earn given the alternative. Further, savings are often underestimated because some forms are less orthodox than depositing money in the bank. They include savings in the form of trees and the discharge of social obligations which can be drawn upon at a later date.

It is also possible that a good deal of saving by agricultural households, in Polynesian nations at least, is undertaken using funds from remittances (money sent by relatives living and working overseas). Also, savings can be held overseas by expatriate relatives. In these cases, the level of savings is unlikely to be affected by the degree of commodity price variability. Evidence is lacking on the extent to which rural household members save from remittances and from earnings outside the country. What evidence there is does not reveal much. For example, Wilson (1987) found little conclusive evidence of a positive relationship between savings and remittances among rural households in Tonga.

Ilala (Chapter 14) argues that the stabilization scheme in Solomon Islands operated by the Commodities Export Marketing Authority (CEMA) has been successful in obtaining rates of interest on producers' monies held in the stabilization fund that are higher than could have been obtained by individual producers. This is true, and it is to the credit of CEMA that it has been able to do this. But this situation reveals two important issues that have nothing to do with the marketing of export commodities or stabilization. The first is the lamentable state of affairs in rural financial markets and savings facilities. Second, if the government needs to provide better savings facilities for rural people, it should work through proper savings institutions and not through a marketing institution. It is vital that the problem of lack of savings facilities in rural areas is tackled directly, because an indirect approach will not remove the root causes of this important problem.

Impact of export price instability on investment and maintenance

The lack of evidence on the relationship between export revenue variability and saving is replicated for the relationship between price variability and producer investment in South Pacific countries. This is unsurprising given the *ex post* identity between saving and investment. If the potential for saving is higher in times of greater instability, then it follows that the potential for investment is similarly higher. As Jarrett and Anderson (1989) pointed out, the forced saving caused by agricultural stabilization schemes is likely to have reduced private investment in agriculture.

The issue of commodity price instability and maintenance of plantations from which the export crops are produced is a vexed one. There is every reason to believe that maintenance is neglected during extended periods of low prices, as Ilala (Chapter 14) has pointed out. Again, the evidence is fragmentary and anecdotal, but the logic of the argument is quite persuasive. Producers often reallocate their productive time to other activities during these periods, and venture little into the plantations. They have neither the time nor inclination to carry out normal maintenance operations.

However, it should be stressed that extended periods of low prices are not the same as unstable prices; they are different situations which require different actions. One of the problems of extended periods of low prices, as South Pacific governments have recently found out, is that stabilization schemes may be troubled during these periods, and may need to be bailed out. Some means of 'pot-holing' or short-term subsidization by governments is likely to be a more effective means of keeping producers in plantations and carrying out maintenance during these periods.

Impact of export price instability on resource allocation

A major justification of stabilization schemes is that they reduce the distortions of price instability and enable producers to make better resource allocation decisions based on long-term price trends. This is a reasonable argument if it can

be shown that resource allocation is worse without a stabilization scheme than with one.

There is negligible evidence on this matter but what is available does not appear to justify stabilization. First, in relation to investment, it has been argued above that there is no reliable evidence that investment levels are being suppressed by the degree of instability in commodity prices. Furthermore, the major investment item that producers are likely to make in the tree crop industries (for which stabilization schemes exist) is the crop plantation itself, either replanting or new planting. Decisions about plantings have been influenced more by government programs and subsidies than by trends in current commodity prices.

Looking for price instability distorting supply response decisions, Fleming (1988a) and Fleming and Rees-Jones (1989) found no evidence that this occurred in the copra industry in Solomon Islands or Vanuatu. Coulter (1989a) and Ilala (Chapter 14) have challenged the finding of the Solomon Islands study, arguing that because stabilization schemes existed in this country, producers are to be expected to be indifferent to risk. This is a debatable point. The effect of stabilization is relative; even under a stabilization scheme there is a good deal of price variability. To take the figures quoted by Ilala (Chapter 14) as an example, the Solomon Islands coefficient of copra price variation over the period 1972–87 was 42 per cent compared with 52 per cent in the unstabilized situation. There is no evidence to suggest some threshold exists between these two figures at which producers stop worrying about price variability. If there is no threshold, the result of the studies by Fleming (1988a) and Fleming and Rees-Jones (1989) which reflects response to price risk at the margin should be valid.

Stabilization is itself a costly exercise in resource use. It ties up scarce financial resources in stabilization funds, and uses skilled and experienced government administrative personnel who have a high opportunity cost in the Pacific islands.

A final point concerns intersectoral resource use distortions caused by agricultural stabilization schemes. According to Jarrett and Anderson (1989:72–3), during a period of prolonged low prices, producers of export commodities with stabilization schemes would have less incentive to divert resources to other, more socially profitable activities than would producers in other countries. Yet, observing low prices in international markets, they would be no more inclined to invest to improve long-term productivity.

Stabilization of the regional economy

The importance of agricultural export activities as cash sources is generally greater at the regional level than at the macroeconomic level. It is therefore desirable to examine the implications of commodity export price stabilization for the rural regional economy. The key question is what regional-level activities

rely for their funding on agricultural export earnings. Three potentially important areas of activity are regional government activities and programs, the economic activities of regionally-based industries and the provision of infrastructure in regional economies.

The implications of agricultural stabilization for funding regional programs are most likely slight throughout the South Pacific. The chief source of funds for regional governments usually derives from the national government. Few if any regional institutions have the power and capability to raise the bulk of their revenue through their own forms of taxation.

Instability in export earnings is potentially damaging to regionally-based industries that have close relations with the agricultural export sector. Instability can be transferred to industries: through forward and backward linkages. Transfer through forward linkages occurs when the marketing and processing of agricultural products are destabilized through agricultural instability. However, this is of most concern in respect to volume instability. Because the stabilization schemes in the South Pacific operate on price and not volume, there is no guarantee that they will reduce instability in throughput, and may indeed make it greater. Transfer through backward linkages occurs when agricultural export instability depresses and destabilizes the demand for goods and services by farmers from regional industries. Although there is little evidence on inter-industry linkages in rural regional economies in South Pacific islands, what evidence there is suggests that they are weak (e.g. Faletau 1985) and that most goods and services are supplied to producers by industries outside the region. These weak linkages reduce the impact of agricultural export instability on regional industries supplying goods and services to export producers.

The impact of instability on the supply of infrastructural facilities in rural regional economies is an area of concern. First, it can lead to wide fluctuations in the use made of these facilities over time, requiring larger investments than would occur with smooth flows of commodities in order to prevent bottlenecks in busy marketing periods. But once again, this is a problem of volume instability which is unlikely to be solved by price stabilization. A second and related point, which Ilala (Chapter 14) argues legitimately, is that periods of low prices can disrupt the provision of services such as coastal and inter-island shipping which rely on backloads of commodities such as copra from remote locations. When, as happened in Northwest Malaita, Solomon Islands, during the survey work undertaken by the South Pacific Smallholder Project, there is a large shift out of copra production into fishing when prices are low (Jones, Fleming and Hardaker 1988), providers of infrastructural facilities and services suffer. But the key factor here is periods of low prices and not instability in itself. As mentioned above, the best solution to extended periods of low prices may be short-term government subsidies or 'pot-holing' producer prices rather than stabilization.

A final point is that the arguments for regional economic stabilization rely on assumptions similar to those mentioned above in the discussion of

macroeconomic stabilization issues. Chief among these are that price stabilization can be fairly closely translated into revenue stabilization, and that export earnings from stabilized agricultural commodities form a major part of the inflow of cash into the regional economy.

Conclusions

The purpose in this chapter has been to demonstrate that commodity price stabilization schemes in the agricultural export sectors of Pacific island countries do not automatically produce net benefits. The various arguments for and against stabilization have been examined at three levels: macroeconomic, microeconomic and regional. While it is conceded that not all issues at these three levels are clear-cut in not favouring stabilization schemes, the weight of evidence and theory suggests that the arguments against stabilization predominate.

There is a need for more evidence, particularly on the impact of instability on individual producers supplying the export market. Hopefully, a clearer picture of the worth of stabilization schemes will emerge when this evidence is forthcoming. At present, it should be incumbent on proponents of stabilization to demonstrate its worth, more so than on others to demonstrate that it is not worthwhile.

Ilala (Chapter 14) concluded his chapter with the statement that 'tree crops are long-term crops which require long-term policies'. Precisely, and a preoccupation with short-term measures such as price stabilization can only detract from efforts to put in place appropriate long-term strategies for the development of tree crop-based agricultural export sectors.

CHAPTER 7

Marketing research activities of marketing authorities in South Pacific island countries

Euan Fleming

Marketing research features regularly in the goals and functions of marketing authorities in the South Pacific (Antony and Fleming, Chapter 2). A research function is explicitly stated for many marketing authorities (e.g., the Cocoa Board, Coffee Industry Board (CIB) and Copra Marketing Board (CMB) in Papua New Guinea, the Commodities Export Marketing Board (CEMA) in Solomon Islands, and the National Marketing Authority in Fiji (NMA)). Marketing research is implicit in the goals set for other marketing authorities. For example, the Vanuatu Commodities Marketing Board (VCMB) is charged with the responsibilities of making commodity marketing more efficient, diversifying agricultural exports and improving producers' understanding of export marketing networks and methods. The Tonga Commodities Board (TCB) is charged with providing all necessary marketing services for agricultural producers in the country.

The marketing research function in the Pacific islands has four dimensions:

- to maintain or increase market share for commodities already traded;
- to develop new raw material commodity exports;
- to develop new value-adding processes for existing commodity exports; and
- to lower marketing costs per unit of throughput.

An attempt is made in this chapter to determine how marketing authorities are undertaking their marketing research roles, and how successful they have been in meeting the four research goals listed above.

To this end, representatives of South Pacific marketing authorities were given a questionnaire to complete on the marketing research activities undertaken by their organization over the past five years. Detailed information was requested

on each research activity, including the amount of resources committed to it. As only some of the questionnaires were completed, this information was supplemented by two other sources. First, the annual accounts and reports of the marketing authorities were used to provide an idea of the level of expenditure on marketing research and major research projects, either alone or with other national or international institutions. Second, informal discussions with most of the managers provided additional information about their marketing research activities.

Results are discussed in detail in the next section. After this analysis, marketing research performance is assessed, and it is concluded that it has been inadequate. A number of explanatory factors are discussed and policy options suggested for improved marketing research in the future.

Results of marketing research activities survey ---

A fairly clear picture of marketing research emerged from this survey. First, in general, marketing research activity is remarkable for its low level. It is apparent that the marketing research function has not been a priority and few resources have been allocated to it. In a sense, this result is unsurprising. It has been common in developing countries to devote agricultural research resources to the production system with little regard for the research needs of the marketing system.

Second, the variations among countries in research effort is significant. Most notable has been the vast array of applied marketing research that has been undertaken by the NMA in Fiji since its financial reliance on government was severed. This has coincided with greater independence for the management to pursue commercial prospects without political interference. Those marketing authorities with a participatory marketing role and a strong commodity orientation appear to have done least marketing research.

Of the four chief dimensions to marketing research mentioned above, most effort (with the exception of NMA) appears to have gone into maintaining market share for existing commodities being handled. It is surprising that few resources have been put into the development of new export commodity markets, despite the importance governments in the region give to this endeavour. A similar situation prevails with the development of value-adding processes for existing export commodities. It is also surprising how little research has gone into the reduction of marketing costs. It appears that responsibility for research on value-adding processes and reducing marketing costs has been vested with other development organizations. In most cases, this research is likely to occur within the development project planning process which tends to be dominated by planning agencies and international donor and aid agencies. For example, the Asian Development Bank-sponsored Rural Services Project in Solomon Islands took the major responsibility for developing new marketing depots for copra in rural areas. It appears that marketing authorities have been largely excluded from this process.

Assessment of marketing research performance

The success of South Pacific island countries in undertaking agricultural marketing research can be gauged by assessing changes in export market shares for traditional exports, the development of new agricultural export industries and changes in marketing costs. Brief comments follow on recent performance in each of these areas.

Export market shares of traditional agricultural commodities

Negligible success has been achieved by most Pacific island countries in expanding their export market shares for traditional export commodities. The most disappointing area has been the copra and coconut oil export industry, where the South Pacific islands have been losing ground in the world oils and oilseeds markets. Cocoa, a traditional export crop in Western Samoa, has also experienced a dramatic decline in export share. Bananas have also been a traditional export crop in nations such as Western Samoa and Tonga, and here again, export market share has all but disappeared.

One of the few exceptions has been Papua New Guinea's cocoa and coffee exports. To the extent that they could now be termed traditional exports, exporters of these commodities have made some inroads in their export markets. Research into quality control and grading has been an important factor in keeping these industries competitive in world markets.¹

Development of new agricultural commodity exports

Only modest success has been achieved in the development of new raw material and semi-processed agricultural exports. Papua New Guinea, for example, has had some success with palm oil, although this development cannot be credited to marketing authorities. Cocoa and palm oil exports have expanded in Solomon Islands over the past two decades but, again, this has not been due to the activities of the marketing authorities. Palm oil exports have been the most notable success story with post-harvest and marketing activities undertaken by Solomon Islands Plantations Limited (SIPL), a joint venture between the Commonwealth Development Corporation and the Solomon Islands government. The development of cocoa exports has taken place where private marketers are solely responsible for exports.

The development of kava and cocoa exports feature in the recent commodity export history in Vanuatu. However, the Vanuatu Commodities Marketing Board took over responsibility for these crops only after the export markets had been developed by private exporters.

Ginger, a recently-developed export, has already become the third major export earner after sugar and coconut oil in Fiji (McGregor 1990). Its

¹ See Chapter 9 by Ivarami and Yarbrow for an example of the research initiatives undertaken by the Cocoa Board in Papua New Guinea.

development as an export industry has been achieved with private marketers dominating the exporting. The National Marketing Authority has also attempted to establish some small exports of raw materials and semi-processed and processed commodities; but mainly since the organization began operating on an independent commercial basis, partly in partnership with private industry.

Western Samoa can boast of three successful minor forays into new export markets. The best example is taro exports which grew as a result of the initiatives of private growers and marketers, with virtually no government support. Recently, some modest gains have been made in the kava industry, again due almost entirely to private initiatives. A third area of interest in Western Samoa is coconut products. The coconut oil industry has been the target of government initiative through a major development project. Unfortunately, it has not been very successful, and the economics of the industry are dubious. The recent private initiative to develop coconut cream exports has been more successful.

In Tonga, recent development of the vanilla export industry has been hailed as a success story. Although the Tonga Commodities Board (TCB) has been involved in vanilla export marketing, much of the impetus for development of the industry came from agricultural ministry personnel and private traders. The recent expansion of the pumpkin export industry also owed much to growers and agricultural ministry personnel, working initially with an overseas private exporting company and growers' associations. To date the TCB has had only a minor role. Difficulties have been experienced in this industry, due in part to government officials' poor appreciation of export requirements. A number of recently-formed growers' organizations currently involved in pumpkin export have placed greater reliance on expert private marketing assistance.

To sum up, there is little evidence to support the contention that marketing authorities have played a major role in the development of new export markets. This finding applies to new raw material exports and the export of semi-processed and processed agricultural commodities. On the contrary, most successful initiatives have come in industries in which export marketing is wholly or predominantly undertaken by private exporters.

Reduction in costs of marketing agricultural exports

Lack of data makes it difficult to reach any general conclusions about whether marketing costs per unit of throughput have declined over time in industries in which marketing authorities are responsible for discharging, or in some way influencing, export marketing functions. Nevertheless, it has been possible to use the costs data collected for copra export marketing by marketing authorities (Fleming and Antony, Chapter 5) and the data on cocoa and coffee export marketing margins reported by Fleming and Antony (Chapter 3) and Smith (Chapter 8) to make some tentative findings.

The cost analysis of copra export marketing by marketing authorities undertaken in Chapter 5 was extended by adding time trend variables specific to each of the five nations included in the study. In all cases except Western Samoa, the coefficients on the time trend variables were positive, although they all

proved to be insignificantly different from zero. In the case of Western Samoa, the significantly negative trend variable reflects a cost reduction from an extremely high level after the reorganization of the Copra Board in the mid-1980s. This reduction is therefore highly unlikely to have resulted from marketing research. It appears that marketing authorities have not been successful in reducing copra export marketing costs over time through marketing research.

There are similar findings for the cocoa and coffee industries in Papua New Guinea, based on trends in marketing margins reported in Chapters 3 and 8. Assuming constant rates of profits over the periods of study, it appears that marketing costs have shown no significant trend over the period 1985-90. Cocoa margins in Papua New Guinea have also been constant in real terms on the basis of data reported in Chapter 3. Cocoa export marketing costs have been declining in recent years in Solomon Islands where private marketers exist. However, the most likely explanation for this trend is the maturing of a young industry, as larger throughputs enable greater size economies to be gained.

The overall finding must be that there is no evidence of declining real marketing costs in the agricultural export industries in which marketing authorities are dominant. The tentative conclusion reached from this finding is that the marketing authorities in these industries have not been successful in researching more cost-efficient ways of exporting the commodities concerned.

Factors retarding effective marketing research by marketing authorities

A number of reasons can be put forward to explain the unsatisfactory marketing research performance by most marketing authorities in the South Pacific:

Commodity orientation	Most marketing authorities have responsibility for the marketing of only one or a very small number of commodities. Such an approach to export marketing restricts the research possibilities that these boards can explore.
Lack of incentives	There is little incentive for managers of marketing authorities to carry out marketing research apart from their own natural curiosity. As monopolists, they are not competing with other marketing firms for their share of export volume. Nor are they remunerated according to additional revenue generated or costs saved, or penalized if they fail to carry out research.
Culture	Some marketing authorities virtually operate as government bureaucracies rather than entrepreneurial marketing organizations. They regard their role as one of <i>selling</i> the output of agricultural producers rather than undertaking <i>full marketing</i> functions, by researching what is required in the market-place and then attempting to obtain the necessary commodities to satisfy these demands..

Staffing	Few if any marketing authorities have the staffing capacity for marketing research. The people with greatest capability are usually the executives of the boards whose general managerial functions leave them little time for research activities.
Budgets	Few if any Pacific island governments are prepared to allow marketing authorities to develop the capital and recurrent budgets necessary to do export marketing research properly.
Other government support	Export marketing research is difficult. Researchers need to know what is going on in markets overseas and the importers and final consumers of the commodities being exported are a long way away. The potential sources of marketing innovations which can be adopted and modified to local circumstances also are in overseas countries. Even in major agricultural exporting countries such as Australia, the trade services which governments can offer to assist exporters are deficient. In the Pacific islands they are virtually non-existent, except for some basic services offered under aid by the New Zealand and Australian governments. If export marketing research is to be effective, some way has to be found to improve these services through the aid processes. It is unlikely that government budgets will be sufficiently large to meet these needs.
Lack of integration of agricultural production and marketing research	It is seldom feasible to determine whether innovations should start on the production side (on the farm or experimental station) or on the marketing side (finding out what the consumer wants). It follows that it makes little sense to carry out marketing research in isolation from production research. Such an approach leads to anomalous situations, frequently observed in the Pacific islands, where agricultural ministry officials with expertise in production take on marketing functions for potentially new exports, with marketing organizations either ignored or called in at a late stage in the innovation process. The result is almost inevitably that the marketing processes are badly carried out, and the venture often fails. The so-called 'boom-busts' of many new products in the South Pacific have travelled down this path.

Policy options for improving export marketing research —————

The recommendation of policy options depends on the future role accorded to marketing authorities. Hence, two sets of options are presented below. The first set is made on the assumption that marketing authorities continue to operate as they currently do, with a mandate for undertaking agricultural export marketing research. The second set is made on the assumption that the future role of agricultural export marketing research will fall principally to private marketers.

Continued marketing research by marketing authorities

If marketing authorities are to continue their current function as the main source of agricultural export marketing research, radical changes need to be made. They are as follows:

Removal of commodity restrictions	An obvious step is to remove the impediment to research placed on some participatory boards through restrictions on the commodities for which they are responsible. If the boards have a free choice of commodities they can handle, they are more likely to participate in the development of new commodity exports that have good market prospects.
Increased incentives to innovate	This can be achieved in three main ways. First, the culture of certain marketing organizations needs to be changed and rewards given for successful innovations. Second, marketing authorities can be made to compete with private marketers, so that they no longer have a monopoly on the export trade in designated commodities. Third, organizations need to be removed from direct government control as much as possible, so that their own future is bound up with the success they have in expanding profitable operations.
Staffing	Marketing authorities will not be able to undertake useful marketing research unless they have appropriately trained staff familiar with marketing operations. Training in marketing for existing staff and increasing budgets to acquire marketing expertise are vital to good marketing research. Greater technical assistance under aid programs should also help.
Better access to support services	Aid to Pacific island countries has historically focused on production systems and short-term investment projects rather than longer-term support programs. Ironically, international aid agencies have been largely responsible for some of the more futile efforts to develop the agricultural marketing systems through infrastructure and processing factories. A competent agricultural marketing research capacity would have put a quick end to some of these disasters before they reach completion.

There are three ways in which Pacific island governments, in association with these aid agencies, could help research of marketing authorities. The first is to give greater attention to long-term programs which build up the capacity of a nation to do good marketing research. Second, marketing research components could be built into development projects in a more constructive way and with greater involvement of marketing authorities. Third, more direct assistance could be given to marketing authorities to do marketing research through the provision of funds or trade services. In respect of the latter, it might be more cost-effective if outside consultants with expertise in marketing areas or markets could be brought in on a short-term basis to carry out specific marketing research assignments.

Integration of production and marketing research It is imperative that some way is found around the artificial structures separating production and marketing research. Research activities of marketing authorities need to be integrated with those of organizations responsible for research in agricultural production.

Private agricultural marketing research

The evidence obtained from the survey, while admittedly sketchy, does not support a future role for South Pacific marketing authorities in agricultural marketing research. If this were to be the sole justification for their continued presence, they should be disbanded and the marketing research functions left with private marketers. However, this solution would be inappropriate if there were socially desirable marketing research functions which are privately unprofitable.

In any case governments would not lose responsibilities in agricultural marketing research completely. Some of the forms of assistance mentioned above, including access to trade support services, training and involvement in production research programs, would also be needed by private marketers. Government involvement in agricultural marketing is likely to be required in two areas. First, there is a need to ensure that export trade services are made available (preferably at a cost) to private marketers. If, as is likely, governments are unable to provide these services themselves, then governments should undertake the role of aid intermediation. Second, private marketers seldom have direct access to aid funds, and governments can guarantee this access by acting as intermediaries between international agencies and the marketers.

Conclusion

Evidence suggests that marketing authorities have not been fulfilling their marketing research functions very well. An interplay of factors likely to be causing this outcome has been described. The relative importance of each factor varies from one marketing authority to the next. Depending on the importance of these factors, a number of remedial steps can be taken by Pacific island governments. The most appropriate solution appears to be to rely on private marketers to perform most marketing research functions, but with government playing a supportive role. Where marketing authorities continue to dominate agricultural export marketing, a number of options, outlined in the chapter, can be implemented to improve their research performance in the future.

CHAPTER 8

Coffee marketing margins in Papua New Guinea

D.G.V. Smith

The size of marketing margins at the processing and export stages for coffee in Papua New Guinea over the past five years is analysed in this chapter. As the coffee industry has operated a stabilization scheme for over ten years with levies and bounties paid at the point of export, it is vital to determine whether the marketing chain works competitively and whether the benefits of stabilization accrue to the grower.

A simple analysis of price series is undertaken, with no attempt to identify the costs of processing and exporting and thereby separate profit from the crude margin. However, earlier studies suggested that marketing costs vary considerably between exporters and processors (Hassall 1982; McGowan 1989)

The analysis presented here shows that while there is no evidence to prove that price stabilization is passed back to the growers, there is also no evidence that it is not. Between 1985 and 1990 high exporter margins coincided with periods of both high and low bounties, indicating that stabilization prices were not the determining factor. This analysis does indicate, however, that exporters benefit disproportionately during periods of quotas.

Background

When coffee prices are high, the whole of the Highlands economy in Papua New Guinea booms and, conversely, when prices are low, company failures jump and confidence is low. As coffee is the most important source of income and employment in the Highlands, the 'multiplier effect' of higher income from coffee production should be strong and filter through to the rest of the economy. But should the change in prices affect the revenue of the processors and exporters in the coffee marketing chain? In theory, the marketers should simply pass on marketing costs to the grower, and competition should ensure that these

margins are broadly constant. Processor and exporter margins, and their profitability, should not be related to the cycles in coffee prices.

In practice, the coffee market works differently. There have been many 'disturbances' to the free market, in particular the operation of quotas. In addition, other factors have affected the operating costs of processors and exporters, notably the increase in interest rates, the devaluation of the kina and exchange rate restrictions. Furthermore, most businesses in Papua New Guinea are having to cover higher costs for security and insurance resulting from increased law and order problems.

Despite these factors which affect processor and exporter margins, most of the variability in the export price will be borne by the grower. If, for example, the export price has an average annual variation of 25 per cent and a constant marketing margin represents half of the export price, the price variability at the producer level would be 50 per cent.

The inherent exposure of coffee growers to price volatility is the fundamental reason for the existence of the Coffee Industry Board (CIB): to safeguard the interest of the grower as the final and most vulnerable member in the marketing chain. The volatile nature of the growers' price for coffee has been the main justification for the operation of a price stabilization scheme over the past twelve years.

Market structure

As the marketing and exporting of coffee is carried out by private enterprise, it is the role of the CIB to ensure that the system works competitively and that the grower receives a fair price. Although the CIB has the power to intervene in the market to buy or sell coffee and also has the power to fix minimum prices, neither of these options has been used. The Board therefore relies on its power to set standards and license to ensure that adequate competition prevails.

The coffee marketing structure in Papua New Guinea, set out in Figure 8.1, shows the three stages in the marketing chain.

Exports

There are currently fourteen registered green bean exporters (of which twelve are currently active) and one specialist roast bean exporter.¹ Of the fourteen, there are essentially three different types of exporting companies:

- *Specialist exporters (Papua New Guinea Coffee Exports, Namasu, Cofex, Kumul).*

These companies are middlemen in the true sense as they buy in green beans from processors and sell to roasters overseas. Although their task is essentially to find a buyer and seller, most exporters are also involved in some regrading, and therefore value-adding, processes. These four companies accounted for approximately 36 per cent of exports in 1989–90.

¹ There were three new licences granted in September 1990: Kora 85; Kota Coffee; and Erinem and Konginem.

- **Partly integrated exporters (Angco, CIL, Panga, Kundu).**
The two largest of these companies, Angco and CIL, are primarily involved in the export stage but have some processing facilities and also own or have a share in some plantations. The other companies are, to a varying degree, involved in processing and plantations. These four companies accounted for 57 per cent of exports in 1989–90.
- **Plantation-based exporters (PTC, Waghi Mek, NGHCE).**
These three companies are plantation-based operations that are integrated through to the point of export. While they are small in terms of the total volume of coffee exported (7 per cent of the total exports in 1989–90), they export around one-third of the plantation crop between them.

Roast exports are still a very small part (10 tonnes out of 67,000 tonnes) of total Papua New Guinea coffee trade. There is currently one specialist roast exporter, Arabica. This exporter and Angco account for 90 per cent of roast exports. PTC and Kundu have also exported small quantities of roast coffee.

Processing

At the end of 1990, there were fifty-eight registered processing factories and twenty-six unregistered factories. All factories that buy in cherry or parchment from growers need to be registered; thus, unregistered factories are plantation-based facilities processing their own coffee. A typical processing factory has a throughput of around 25,000 bags though some produce up to

Figure 8.1 Coffee marketing system in Papua New Guinea

100,000 bags. Many processing plants are operating at less than full capacity. Therefore, there would initially be no processing constraints if coffee production in Papua New Guinea were to grow.

Production

At the grower level there are three sorts of producers: smallholders (72 per cent of production); '20 hectare blocks' (4 per cent); and plantations (24 per cent).

There are approximately 270,000 smallholders, although this number cannot be precise as many more family and village members could be involved in the production, processing or marketing of coffee. A typical smallholder garden produces around 700 to 1000 kg of coffee (green bean equivalent) from gardens of around one hectare. Most process the cherry to parchment using simple hand pulpers and sun drying. The parchment is then sold to roadside buyers or directly to the factory.

Smallholders, with the help of the Coffee Development Agency (CDA), are increasingly forming marketing groups to pool sufficient coffee to enable the factory to collect the coffee and offer the factory price to the grower. Efforts are also being made to enable marketing groups to arrange (under contract) for the dry processing of coffee and its direct sale to the exporter. But the vast majority of smallholders are stuck at the end of the marketing chain and are dependent on the factory door or roadside price. Roadside buyers operate either as independent middlemen or as buyers for a factory. The CIB currently does not require these buyers to be registered.

There are around 15,000 hectares of plantation coffee with the typical size of each plantation being approximately 50 hectares. Most companies buy from and are located near several plantations, the average size of a plantation group being about 300 hectares. Most plantations have an established stock of trees over fifteen years old although there have been cycles of new plantings over the past twenty years. Most plantations have wet and dry processing facilities and sell directly to the exporter, thereby obtaining the d.i.s. price. One-third of the plantation sector is integrated through to the export stage.

The '20 hectare block' scheme was started in the late 1970s using finance from the World Bank which was largely administered by the Agriculture Bank. There are about 230 blocks which account for roughly 4 per cent of production. The purpose of the scheme was to enable smallholders to develop coffee on a larger scale and reap the benefits of plantation yield levels of around 2 tonnes per hectare. Blockholders provide the sweat equity with management provided by the Agriculture Bank, although private management agencies and some exporting companies are becoming involved. For a number of reasons, the success of the scheme has, at best, been mixed. The current sustained period of low prices has greatly aggravated the viability of most blocks. While plantations are just breaking even (before debt interest), the blocks are suffering severe cash flow difficulties even though they benefit from concessional rates of interest.

These difficulties have been partly a result of the high establishment costs of the blocks.

Methodology

The marketing margins estimated in this chapter have been defined as follows:

<i>Exporter margin</i>	net f.o.b. price minus d.i.s price
<i>Processor margin</i>	d.i.s. price minus factory door price
<i>Total margin</i>	exporter margin plus processor margin.

Net f.o.b. price is defined as f.o.b. price plus stabilization bounty minus export tax minus stabilization and other levies.

The distinction between exporter and processor margins is not relevant to all companies as there is increasing integration between the exporting and processing activities. Similarly, only the f.o.b. export price is relevant for the profitability of the plantation-based export operations.

In most cases coffee is sold on an f.o.b. (ex Lae) basis. Thus, it is the overseas buyer who covers the cost of transport from Lae to the end destination. The f.o.b. price is quoted on the bill of lading of the shipping documents. Prior to presenting the documents to customs, the exporter is required to register the contract with the CIB, which has the power to refuse the contract if it deems the price quoted unreasonable.

The f.o.b. price quoted on the contract submitted to the CIB and on shipping documents is a gross price before taxes and levies. The net f.o.b. price is derived by taking account of the export tax of 2.5 per cent (suspended in May 1989), grower levies paid to the CIB, Coffee Research Institute (CRI) and CDA (currently 4 toea/kg in total), and any stabilization levy or bounty. All three of these levies/bounties are collected or paid at the point of export.

The d.i.s. price is a weekly quotation offered by exporters for various grades of coffee to processors. The data used are therefore not actual prices but quotations around which some negotiation will follow depending on the quality, volume and reliability of the supplier. But the quotes can be regarded as fairly close to the average actually paid. The prices used are an arithmetic average of the quotations offered by the exporters and are not weighted by the volume of trade.

The factory door price is an arithmetic average of all the quotes supplied by thirty to forty factory managers for parchment at the factory door. The conversion from parchment to green bean equivalent is done at the standard ratio of 1 kg parchment = 0.8 kg green beans.

In order to derive the average margin, it is necessary to assume a certain time lag from the purchase of the coffee from the grower to the point of export. During the season, coffee can be turned over very quickly but most exporters do some regrading and rebagging before export. Much of the coffee business is

done 'back to back', which means that purchase contracts with the processor are made as close to the sale contract as possible. But many sales contracts are made long in advance, some at a fixed price. There can therefore be both a lag and a lead between the average monthly export price and the growers' price.

It is therefore necessary to look at the overall trend in the margin rather than the margin in any one month. Ten-month moving averages are used in the analysis for this reason. Regression analysis shows that the relationship between the d.i.s. price and the net f.o.b. export price is more significant for the current period than for either a lead or a lag of one month (correlation coefficients are also higher). This relationship also holds for the regression between the factory door price and the d.i.s. price. Therefore, all margins have been derived on the basis of the current period.

Results

Total margins

Table 8.1 sets out the annual average factory, d.i.s and net f.o.b. export prices for Arabica coffee between 1985 and 1990. The averages are based on the arithmetic averages of the monthly price quotations. The standard deviations therefore represent the spread around the average from the sixty observations. Several comments can be made about the margins presented in the table and shown in Figures 8.2 to 8.4.

Figure 8.2 Papua New Guinea arabica coffee total margin

Table 8.1 Papua New Guinea arabica coffee marketing margins

	Factory price (1)	d.i.s (2)	f.o.b (3)	Bounty (4)	Levy (5)	Toea/kg (6)
1985-86	254.90	317.02	376.45	-	34.90	9
1986-87	195.73	244.35	269.48	44.17	16.55	6
1987-88	157.28	193.97	242.37	35.75	10.81	6
1988-89	135.52	164.45	213.23	44.58	5.95	5
1989-90	116.90	152.96	147.02	39.17	4.00	
5 year average	172.06	214.55	249.71	32.73	14.44	5
SD	57.16	66.22	89.15			
COV	33.22	30.86	35.70			
Annual average variation	17.61	16.44	20.39			

Source: Papua New Guinea Coffee Industry Board.

Figure 8.3 Papua New Guinea arabica coffee processor margin

Net fob (7)	Total margin (8)	Export margin (9)	Processor margin (10)	Per cent		
				Total margin (11)	Export margin (12)	Processor margin (13)
1-5-6)	(7-1)	(7-2)	(2-1)	($\frac{8}{7}$)	($\frac{9}{7}$)	($\frac{10}{2}$)
32.14	77.25	15.12	62.13	23.26	4.55	19.60
90.36	94.63	46.01	48.62	32.59	15.85	19.90
61.25	103.97	67.28	36.69	39.80	25.75	18.92
47.98	112.46	83.53	28.93	45.35	33.68	17.59
82.52	65.62	29.56	36.07	35.95	16.19	23.58
62.85	90.79	48.30	42.49	35.39	19.21	19.92
58.00						
22.07						
13.52						

Figure 8.4 Papua New Guinea arabica coffee export margin

The margins varied considerably over the five-year period, from an average of over 112 toea/kg in 1988–89 to 66 toea/kg in 1989–90. The export margin does not seem to be related to the export price; it was lowest when export prices were highest (1985–86).

The table also shows that the standard deviation (variability) of price at the export level (58 toea/kg) is nearly the same as at the factory door level (57 toea/kg). While this may simply be a coincidence, the strength of the statistical relationship set out below suggests that the variability of the export price is directly passed on to the grower. Therefore, as a percentage of the average price, the standard deviation is only 22 per cent at f.o.b. compared with 33 per cent at the factory door level. The percentage change in the annual average price is 17.6 per cent at the factory level compared with 13.5 per cent at the export level.

Regression results are as follows (with standard errors in parentheses):

$$\text{DIS}_A = -33.69 + 0.93 \text{ FOB} \quad (1)$$

(0.08)

$$R^2 = 0.72$$

$$\text{FDR}_A = -9.75 + 0.85 \text{ DIS} \quad (2)$$

(0.03)

$$R^2 = 0.92$$

$$\text{DIS}_R = -33.51 + 0.77 \text{ FOB} \quad (3)$$

(0.10)

$$R^2 = 0.57$$

$$\text{FDR}_R = 11.05 + 0.58 \text{ DIS} \quad (4)$$

(0.05)

$$R^2 = 0.78$$

where FOB is f.o.b. price,
DIS is d.i.s. price,
FDR is factory door price,
A refers to Arabica coffee, and
R refers to Robusta coffee.

The data and regression results confirm the hypothesis outlined earlier that the grower will suffer disproportionately from price fluctuations at the export level, and thus illustrate the potential need for a price stabilization scheme. It is estimated that, in the absence of the stabilization scheme, the standard deviation of the monthly factory door price would have been over 50 per cent of the five-year average price.

Processor margins

Processor margins shown in Figure 8.3 display a much more constant trend than the exporter margins shown in Figure 8.4. The margins have increased slightly in the past year, possibly on account of the reduction in the size of the crop and the consequent strong rally in domestic prices at the end of the coffee year. Thus, while most processing plants are operating below full capacity and could potentially pass on lower unit costs to the grower, there does not appear to be any significant fall in the size of the processing margin. Regression analysis results given in equations (2) and (4) above show a very close statistical association between the factory door price and the d.i.s. price.

Exporter margins

Relationships between d.i.s and f.o.b. prices are given by equations (1) and (3) above. They show a strongly significant relationship with a high degree of correlation. For Arabica coffee, a K1.00 change in f.o.b. price brings about a K0.93 change in d.i.s. price.

Figure 8.4 shows that variations in the export margin are much greater than those in the processing margin. Three factors may help to explain this pattern.

Quotas The evidence in Figure 8.4 points to increased margins at the time of imposition of quotas. Quotas could be expected to increase marketing margins for three reasons. First, by restricting the quantity of coffee exported, the quota tends to raise the unit cost of exporting. But, more importantly, quotas will tend to reduce the selling power of the grower when production exceeds the national quota. Once an exporting firm has filled its quota, generally there will be little incentive to buy more coffee. Finally, during a non-quota period exporters will be trying to increase their market share so as to increase quota allocation. In so doing, the growers' price will increase relative to the export price. In all non-quota periods there is always at least an inkling that quotas will be re-introduced and therefore market share remains important for the export companies.

Stock retention scheme During the most recent quota period (October 1987 to July 1989), the margin would also have been affected by the stock retention scheme. A 16 per cent weighting was given to the level of verified stocks under the International Coffee Agreement. As Papua New Guinea had a low level of stocks, it ran the risk of having its quota cut, possibly to around 1.09 per cent of the International Coffee Organization market. The scheme enabled the quota to be increased from 1.15 per cent to 1.18 per cent.

Exporters were set individual targets for stocks to be held under the scheme. They were unable to sell forward to cover their risk because of the continuing need to hold stocks. In addition, the scheme encouraged them to buy in lower-grade

coffee. Thus, as exporters were building up their stocks, they were buying in lower quality grades compared with the coffee being exported, giving the impression of a higher export margin. It is interesting to note that the processor margin fell during this period, confirming this pattern as processors were selling a higher proportion of lower grades.

Marketing risk A further factor that might have contributed to higher margins during this period was the risk exposure of export companies. At the time, the Bank of Papua New Guinea had a policy of limiting the foreign exchange cover to nine months, thus increasing the exporters' exposure to risk.

Number of exporters

In determining the appropriate number of export companies to maximize the growers' return, two opposing views have emerged. It is argued on one hand that a greater number of exporters should provide more competition, and therefore squeeze the exporters' margin towards the marginal cost of exporting. Others argue that a smaller number would tend to lower exporters' overhead costs which is then passed on to the grower provided there is sufficient competition amongst the few large exporters. It is further argued that a smaller number of exporters increases bargaining power with the overseas buyer, or at least reduces the scope for the latter playing one exporter off against another. It is difficult to prove either hypothesis conclusively.

Table 8.2 sets out the market share by exporter over the past ten years. The top three exporters controlled over 80 per cent of the market in 1980, but this share had fallen to just 58 per cent by 1989–90. Thus, while the rise of some of the

Table 8.2 Percentage distribution of total volume of coffee exports in Papua New Guinea

	1979–80	1984–85	1985–86	1986–87	1987–88	1988–89	1989–90
Angco	41.4	38.2	38.3	27.4	32.4	33.6	29.7
Coffee International Ltd	26.6	22.0	12.2	18.1	14.8	13.6	12.7
Cofex	3.1	5.0	4.8	9.1	5.7	6.0	7.3
Kumul	-	10.3	5.3	0.1	9.0	3.8	0.0
Kundu	7.6	6.7	6.3	9.2	6.9	4.6	5.1
Namasu	3.1	5.6	10.9	3.4	5.6	4.7	11.9
Panga	-	-	4.2	10.4	6.9	15.4	9.5
Papua New Guinea Coffee Exports Ltd	12.4	9.0	13.1	17.5	15.0	14.0	16.5
Pacific Trading Company Pty Ltd	1.0	0.9	2.2	2.1	1.7	2.2	3.5
WaghiMek	-	2.3	2.7	2.8	2.0	2.1	2.8
New Guinea Highlands Coffee Exports Ltd	-	-	-	-	-	-	1.1

Sources: Papua New Guinea Coffee Industry Board; Papua New Guinea Customs.

smaller exporters has been spectacular, there have been some equally spectacular collapses. By 1989–90, market shares of the five leading exporters had changed significantly, suggesting that the export sector is fairly dynamic and competitive.

It could be argued that the industry was too concentrated ten years ago. The current position, however, with five exporters each with a market share of around 10 per cent or more, should provide the market with sufficient competition to protect the growers' returns.

Cost factors

Detailed analysis of the costs incurred by exporters has not been carried out for this chapter. Two elements, management overheads and interest, account for over 60 per cent of an exporter's cost. Both have risen very sharply in the past two years. Management costs are related to export volumes, but rose directly as a result of the recent 10 per cent currency devaluation. Interest charges have risen by over one-third from a rate of around 12 per cent in 1989 to around 16 per cent in 1990. In the long term, these increased costs will be passed on to the grower but, for the time being, the absence of quotas is keeping the margin keen.

Implications for the stabilization scheme

The arguments in favour of stabilizing growers' returns are well rehearsed (see, for example, Gimbol, Chapter 11 and Ilala, Chapter 14). But given that stabilization levies and bounties have been paid at the point of export and as Figure 8.4 displays considerable variation in the size of the export margin, some may doubt whether the benefits of stabilization fully accrue to the grower. This cannot be proved statistically. While the 'unstabilized' f.o.b. value can be compared with the stabilized (or net) f.o.b. price, the factory or d.i.s. price is always inclusive of levies and bounties. Table 8.1 shows that the annual average variation in the growers' price over the past five years was 17.6 per cent and it is estimated that, without the stabilization scheme, the variation may have been in excess of 27 per cent. But this is only an estimate on the assumption that bounties and levies were passed on in full.

This chapter has shown that exporters' margins have varied considerably over the past five years. However, there have been factors that can explain some of this pattern and there is no evidence to suggest that the margins would have been any different in the absence of price stabilization. The period of high export margins coincided with both high and low rates of bounty. Thus, as far as the Arabica coffee market is concerned, there is no evidence to suggest that the stabilization of prices is not being passed on to the grower.²

2 Studies by the CIB of the Robusta coffee market, which accounts for around 3.5 per cent of Papua New Guinea's exports, cast some doubt on the effectiveness of the transmission of the bounty to the grower.

Conclusion

Price data at three levels in the marketing chain have been analysed in this chapter to determine the size of total margins, processor margins and exporter margins. In calculating the crude margin, no attempt has been made to estimate the costs at each stage, and thus determine the trends in the net margins or profits for processors and exporters. While the total margin has varied considerably in the past five years, there is no evidence to suggest that price stabilization is being 'absorbed' in the marketing chain and not passed on to the grower.

The analysis suggests that the exporter tends to benefit disproportionately during the period of quotas. This raises the question of whether some additional element of competition (such as the auctioning of quotas) could be considered to tilt the balance in the grower's favour. The free market since July 1989 has certainly reduced the marketing margin, but the overall benefit to Papua New Guinea from quotas is another question altogether.

CHAPTER 9

Cocoa grading and quality control in Papua New Guinea

Mark Ivarami and Scott Yarbro

Quality control is an important factor in the export success of a graded commodity like cocoa. Papua New Guinea has generally enjoyed a reputation as a producer of fine or flavour cocoa for which it has received a good premium. In a recent move to upgrade quality control, the Cocoa Quality Management System was introduced to privatize the cocoa quality inspection system and to increase self-regulation of the industry. Early reports on the performance of the new system suggest that further training and more stringent control of quality assessors are needed.

Background

For a number of years, production of cocoa in Papua New Guinea remained stagnant at some 26,000 to 30,000 tonnes per year. Following extensive rehabilitation and new development in the 1980s, cocoa output in the plantation sector increased and almost reached the levels achieved in the early 1970s. However, the cocoa industry has suffered greatly from the continuing political crisis in North Solomons Province which normally produces about 40 per cent of the country's cocoa. Production in the 1990s appears to have fallen back to about 41,000 tonnes due to bad weather in several provinces and the problems in North Solomons.

As production has increased, so has concern over declining quality. In the 1960s, the Food and Agriculture Organization of the United Nations (FAO) determined that 75 per cent of Papua New Guinea's cocoa was fine or flavour cocoa and 25 per cent was bulk cocoa. Fine or flavour cocoa generally obtains a modest premium over bulk cocoa but, because most traded cocoa is bulk, flavour prices usually mirror movements in bulk prices (Vreeland 1986).

Papua New Guinea's status as a flavour producer was a result of the early predominance of Trinitario cocoa in its tree stocks. Trinitario cocoa was first developed in Trinidad by crossing Criollo cocoa with Forastero cocoa. Criollo cocoa is an excellent flavour cocoa and fetches premiums, but its trees are low-yielding and highly susceptible to diseases and pests. Forastero cocoa is more vigorous; it originated in the Amazon and today accounts for about three-fourths of the world's cocoa. Forastero is subdivided into various types, the best known being Amazon and Amelonado. Trinitario trees produce a fine-flavoured cocoa, second only to Criollo, and are somewhat more vigorous than Criollo trees. Papua New Guinea's Trinitario stocks are believed either to have been introduced by German settlers from Samoa, Java and Sri Lanka in the late nineteenth century or to have descended from natural crosses between Criollo and Amazonian parents which were introduced by the early settlers.

Most Trinitario tree stocks have been replaced by Trinitario-Amazonian hybrids. Research on breeding hybrids in Papua New Guinea began early in the 1960s, and distribution of the improved planting materials began in the mid-1970s. Hybrids have proven to be higher yielding, more resistant to pests and diseases, and more vigorous than either Criollo or Trinitario cocoa— but hybrids generally produce bulk cocoa rather than flavour cocoa.

Consequently, the quality of Papua New Guinea's cocoa has changed over the past two decades. In the 1960s and 1970s, 20,000 to 25,000 tonnes of its annual production were flavour cocoa, and the remaining 5,000 tonnes or so were bulk cocoa. Today, estimates are that about 5,000 tonnes per year are truly flavour cocoa (Wood 1985) which is only about 11 per cent of total production in 1989. The remaining 89 per cent is bulk cocoa.

Over 90 per cent of Papua New Guinea's cocoa is imported by countries in Western Europe and North America, with West Germany, the United States and the Netherlands being the major buyers. Overseas buyers require a reliable supply of consistently high standard cocoa in adequate volumes. Since Papua New Guinea has committed itself to hybrid trees and bulk cocoa for the next one to two decades at least, careful quality control must be maintained, and any possibility of improving quality either through research, extension or grading should be supported.¹

This chapter examines cocoa quality assessment in Papua New Guinea and highlights several areas which could be improved. It begins with a brief description of the process used to assess the quality of cocoa. The quality of Papua New Guinea's cocoa is then compared with that of certain other producers and accepted standards. Legislation on cocoa quality control in Papua New Guinea is described together with the functions, powers and activities of the Cocoa Board. Papua New Guinea's grading system is examined, and the difficulties encountered in cocoa grading and quality control are discussed.

1 For example, the Cocoa and Coconut Research Institute of Papua New Guinea has begun a cocoa quality improvement project. The project goals are the development of improved cocoa fermentation and drying technology, suitable for both smallholders and largeholders, and the development of a suitable micro-fermentation technique for screening new hybrids being developed by the Institute. However, progress on the project has been slow due to funding problems.

Assessment of cocoa quality

Manufacturers and consumers judge the quality of cocoa beans by the flavour of the chocolate made from them. Over time, consumers develop preferences for particular flavours, and flavours vary from one country to another. Hence, a manufacturer seeks reliable and adequate supplies of consistent quality from those countries producing the specifically flavoured cocoa needed for its recipe.

Flavour is subjectively measured, but quality is also judged on the basis of certain physical characteristics and the presence of defective beans. These physical aspects also influence demand for a country's cocoa beans.

The most important and measurable physical characteristics are bean size, shell percentage and fat content. Manufacturers prefer beans weighing close to one gram each or, as the industry describes it, having a bean count of close to 100 beans per 100 gram sample. Bean size is important for several reasons. First, beans weighing less than one gram each usually have a higher shell content and lower fat content than one-gram beans. However, increasing the bean size above one gram does not lead to a significant percentage reduction in shell content or increase in fat content. Manufacturers also do not like highly variable bean sizes because small beans roast faster than large beans, leading to imperfect roasting.

Manufacturers prefer a low shell content because the shell has little economic value, and the less shell in the bean, the more nib is available for cocoa products. Fat content measures the percentage of cocoa fat extracted from the nib. A low fat content means a lower fat yield, and may cause chocolate manufacturing difficulties and create an off-flavour taste.

In Table 9.1, physical characteristics are compared for several major cocoa producing countries. West African cocoa, especially Ghanaian cocoa, is most often used as the standard against which to compare other cocoas. West African beans number about 90–100 beans per 100 grams and do not show wide variability in size. Shell percentages are low at 11–13 per cent and fat content is about 56–57 per cent, giving a fat yield of 47–48 per cent of the bean's weight.

Table 9.1 Comparative bean characteristics

Country	Number of beans /100 g	Shell (per cent)	Fat (per cent)	Fat yield (per cent)	pH
Papua New Guinea	75-90	16.4	56.9	44.3	5.1
Ghana	90-95	11.3	57.3	47.8	5.5
Nigeria	90-95	11.7	56.8	47.2	5.6
Ivory Coast	92-105	11.9	56.5	46.8	5.9
Cameroon	96-102	12.9	56.3	47.6	5.4
Brazil	85-105	12.8	54.5	44.5	5.4
Malaysia	85-125	16.0	57.0	45.2	4.8

Source: C.C. Vreeland, *The International Market for Flavour Cocoa: Implications from Grenada*, Project 543-0005, United States Agency for International Development, Washington, D.C., 1986.

Papua New Guinea's beans are larger, with 75–90 beans per 100 grams. Shell content is high at 16.4 per cent, fat content is good at 56.9 per cent but, because of the high shell content, fat yield is only 44.3 per cent.

Manufacturers commonly complain about the high acidity level of Papua New Guinea's cocoa and the resulting bitterness or sourness of the chocolate product. As seen in Table 9.1, Papua New Guinea's cocoa is more acidic (lower pH value) than West African cocoa but less acidic (higher pH value) than Malaysian cocoa. More acidic cocoa must be either blended with milder-flavoured cocoas or undergo further refining to reduce the acidity (at higher production cost). As a result of the relatively high acidity levels and lower fat yield due to a greater shell content, Papua New Guinea cocoa is generally sold at a discount to Ghanaian cocoa.

Bean size, shell content and fat content are largely determined by climatic factors, especially rainfall, and the variety of cocoa grown. Acidity is thought to be affected by fermentation and drying as well as the variety of cocoa. Defective beans are affected by cultural and harvesting practices, fermentation, drying and storage conditions. Mould, which is caused by fungus infection either in the field or during processing or storage, is a serious defect because it affects flavour and the off-flavour cannot be removed in the manufacturing process. Slaty-coloured beans are caused by improper fermentation and result in a bitter flavour. Other defects are insect infestation, germinated beans which lead to rapid infestation, flat or shrivelled beans which have little or no nib content, smoky beans which have been contaminated by smoke and have a

Table 9.2 Comparison of Papua New Guinea average f.o.b. export price and Western Samoa f.o.b. export price, 1968–1989

Year	Papua New Guinea f.o.b. price (Kina/tonne)	Exchange rate (US\$/kina)	Papua New Guinea f.o.b. price (US\$/tonne)	ICCO daily price (US\$/tonne)
1968	509	1.1100	565	700
1969	676	1.1180	756	800
1970	574	1.1150	640	600
1971	425	1.1384	484	500
1972	421	1.1198	471	600
1973	683	1.4227	972	1100
1974	1053	1.4409	1517	1500
1975	935	1.3102	1225	1200
1976	1276	1.2602	1608	2000
1977	2845	1.2640	3596	3700
1978	2372	1.4224	3374	3400
1979	2165	1.4051	3042	3200
1980	1633	1.4955	2442	2600
1981	1229	1.4566	1790	2000
1982	1115	1.3501	1505	1700
1983	1575	1.1907	1875	2100
1984	1970	1.1147	2196	2300
1985	2023	1.0029	2029	2200
1986	1822	1.0320	1880	2000
1987	1635	1.1032	1804	1900
1988	1220	1.1571	1412	1500
1989 ^b	1032	1.1822	1220	1300

Averages:

1970–75

1976–81

^a Average of the daily ICCO price.

^b 1989 = five months, January to May.

Sources: Papua New Guinea export prices: Cocoa Board.

Exchange rates: Bank of Papua New Guinea.

ICCO daily price: Gill and Duffus Cocoa Market Report, June 1989 (New York and London).

Western Samoa export prices: Cocoa Board of Western Samoa.

non-removable smoky flavour, and broken beans which result in uneven roasting.

The degree of fermentation also affects cocoa quality. Inadequately fermented or unfermented beans have a bitter flavour. The internal colour of the bean indicates the degree of fermentation. Fully fermented beans are chocolate brown for most cocoa varieties, but whitish for Criollo and some Trinitario beans; under-fermented beans are purple or violet; unfermented beans are a slate colour.

The 'cut test' is used to determine the bean count, the number of defective

beans and the degree of fermentation. A sample of beans, usually weighing 100 grams, is taken from the cocoa to be assessed. The number of beans is counted in the 100-gram sample. Each bean is cut lengthwise along the side to expose the broad cross-section of the bean. The number of defective beans, including slaty and purple beans, is counted and converted to a percentage.

Because smaller beans have greater shell content and lower fat content than larger beans, the bean count can give buyers an indication of likely shell and fat content. In addition to estimating the percentage of defective beans due to mould, insect damage, smoke contamination or germination, the degree of fermentation can be indicated by the cut test because it counts the number of slaty, purple and brown beans in the sample. The cut test cannot replace a manufacturer's flavour test, but it can provide buyers with objective parameters which can be used for producer comparisons.

Papua New Guinea has been fairly successful in maintaining high physical standards in its cocoa exports. Volumes of the different grades of cocoa exported since the 1978-79 cocoa

port price with International Cocoa Organization daily

Papua New Guinea f.o.b. as per cent ICCO price (per cent)	5-year f.o.b. as per cent ICCO price (per cent)	Western Samoa f.o.b. price (US\$/tonne)	Western Samoa f.o.b. as per cent ICCO price (per cent)
78.36	..	..	..
84.07	..	..	..
94.96	..	579	85.91
89.93	..	597	110.97
73.43	84.15	865	134.74
85.99	85.68	1418	125.49
97.32	88.33	1671	107.18
98.48	89.01	1037	83.29
79.06	86.84	1672	82.20
94.93	91.14	3592	94.83
99.20	93.78	3108	91.38
92.44	92.81	2723	82.74
93.86	91.90	2063	79.29
86.23	93.33	1175	56.60
86.71	91.69	1018	58.64
88.54	89.56	1367	64.54
91.65	89.40	1529	63.81
90.01	88.63	1730	76.75
90.92	89.57	1613	78.00
90.37	90.30	1453	72.80
89.12	90.41	1302	82.20
89.38	..	..	..
90.00			107.93
90.95			81.17

ly price is the average of the first three positions on the terminal markets in New

year (October to September) are presented by Ivarami and Coulter (Table 4.6). The highest grade is export quality cocoa. Its share of total exports has surpassed 95 per cent since the early 1980s, while the share of sub-grade cocoa has fallen below 5 per cent.

Price comparisons

Prices of Papua New Guinea export quality cocoa closely follow the International Cocoa Organization's (ICCO) indicator price, an international price for cocoa, which is calculated from the daily average prices in the New York and London terminal markets for the nearest three future trading months (see Table 9.2). The coefficient of correlation between the price paid for Papua New Guinea cocoa and ICCO prices is 0.99. Papua New Guinea's prices are export unit values (f.o.b. basis) and do not include a freight component, which partly explains the margin between the two price series.

As a crude indicator of quality, the export grade of cocoa is compared with the ICCO price and with Western Samoa's cocoa export price in Table 9.2. A five-year moving average has been constructed to reflect the longer-term movement. The margin between Papua New Guinea and ICCO prices widened

Table 9.3 Comparison of Papua New Guinea average f.o.b. export price with ICCO daily price and Solomon Islands f.o.b. export price, 1970-89

Year	Papua New Guinea f.o.b. price (Kina/tonne)	Exchange rate price	Papua New Guinea f.o.b. price (US\$/tonne)	ICCO ^a price	Papua New Guinea f.o.b. as per cent ICCO price	Solomon Islands f.o.b. price (US\$/tonne)	Solomon Islands f.o.b. as per cent ICCO price
1970	574	1.1150	640	674	94.96	607	90.06
1971	425	1.1384	484	538	89.93	372	69.14
1972	421	1.1198	471	642	73.43	534	83.18
1973	683	1.4227	972	1,130	85.99	814	72.04
1974	1,053	1.4409	1,517	1,559	97.32	829	53.18
1975	935	1.3102	1,225	1,245	98.40	909	73.01
1976	1,276	1.2602	1,608	2,034	79.06	19,34	95.08
1977	2,845	1.2640	3,596	3,788	94.93	3,766	99.42
1978	2,372	1.4224	3,374	3,401	99.20	2,850	83.80
1979	2,165	1.4051	3,042	3,291	92.44	2,612	79.37
1980	1,633	1.4955	2,442	2,602	93.86	2,105	80.90
1981	1,229	1.4566	1,790	2,076	86.23	1,755	84.54
1982	1,115	1.3501	1,505	1,736	86.71	1,756	90.78
1983	1,575	1.1907	1,875	2,118	88.54	1,596	75.35
1984	1,970	1.1147	2,196	2,396	91.65	1,876	78.30
1985	2,023	1.0029	2,029	2,254	90.01	1,928	85.54
1986	1,822	1.0320	1,880	2,068	90.92	1,919	92.79
1987	1,635	1.1032	1,804	1,996	90.37	1,656	82.97
1988	1,220	1.1571	1,412	1,584	89.12	1,364	86.12
1989 ^b	1,032	1.1822	1,220	1,365	89.38	..	..
Averages:							
1970-75					90.00		73.43
1976-81					90.95		87.18
1982-87					89.70		84.29

^a Average of the daily ICCO price.

^b 1989 = five months, January to May.

considerably from 1981 to 1986 compared with other years, due largely to the depreciation of the kina against the US dollar over this period. Table 9.3 provides a similar comparison but cocoa export prices in Solomon Islands replace those of Western Samoa. Western Samoa is selected as another fine or flavour cocoa whereas Solomon Islands is selected as a bulk cocoa exporter.

The close correlation between Papua New Guinea's export prices and world prices indicates that the market is not significantly discounting its cocoa against other major cocoas, and that its cocoa standard is acceptable to buyers.

The moving average not only reflects changes in quality but also the changed proportion of freight in ICCO price. During the high-price years in the late 1970s, freight was a much smaller percentage of the ICCO price. This is the main explanation of the higher percentage figures at that time. Conversely, in the low-price years of 1981 and 1982, freight was a much higher percentage of the ICCO price; hence the lower percentage figures for price.

Because of the freight differentials, the analysis provides only a crude indicator. Nevertheless, it does indicate that the establishment of the Cocoa Board and introduction of its regulatory functions led to improved cocoa quality in the early 1970s, which has been maintained ever since.

Legislation on cocoa quality control

Papua New Guinea has a reputation for being a consistent supplier of good quality cocoa beans. Much of this reputation is due to the country's legislation on cocoa quality control and its enforcement by the Cocoa Board and the quarantine service of the Department of Agriculture and Livestock (DAL).

The Cocoa Industry Act of 1974 codified cocoa quality legislation and established the Cocoa Board of Papua New Guinea. These laws were later revised, and currently the Board operates under the Cocoa Act of 1981 (Papua New Guinea 1981) and the Cocoa Regulations of 1982 (Papua New Guinea 1982) and subsequent amendments. The relevant sections of this legislation are described in the following paragraphs.

Registration of cocoa fermentaries

Before a fermentary can be constructed, its design plan must be approved by the Board; and before it begins operation it must be inspected by either the Board's inspectors or the provincial cocoa coordinator. A number of licensing conditions are imposed on the fermentaries, as detailed in Chapter 4 by Ivarami and Coulter, and the licences must be renewed annually. At the end of February 1990, there were 2,196 registered fermentaries in Papua New Guinea.

Fermentaries are expected to have a minimum of two well-constructed timber fermenting boxes, good drainage, a hot-air drier and clean, waterproof storage space. Each fermentary has a registration number which must be

stencilled on each cocoa bag before delivery to the exporter. In this way, the Board can trace poor quality cocoa back to the fermentary which produced it.

A fermentary's registration may be suspended if any conditions are violated, and while suspended, the fermentary is not allowed to operate until the Board is satisfied that conditions have been corrected. Any person found in violation of the conditions may be fined and/or imprisoned up to six months. Any person aggrieved by a Cocoa Board decision may appeal in writing to the Minister for Agriculture and Livestock to overrule the Board's decision.

Registration of cocoa dealers

Cocoa dealers are owners of registered fermentaries who are licensed by the Board to purchase and process wet beans. Of the 2,196 fermentaries registered at the end of February 1990, 1,041 also had a dealer's licence. Conditions on their licences are enumerated by Ivarami and Coulter in Chapter 4.

A dealer's licence may be suspended if any of the licence's conditions are violated, and the owner could face a fine and/or imprisonment. Similarly, the dealer's fermentary licence could be suspended if any of its conditions are violated.

Ivarami and Coulter (Table 4.1) showed the growth in the number of registered fermentaries and wet bean dealers since the late 1970s. A decline occurred in registrations for the 1989–90 year which was due entirely to turmoil in North Solomons where the Cocoa Board was forced to suspend registrations in late 1989. Registrations in other provinces have continued to increase as the industry has expanded and more smallholders have planted cocoa.

Registration of exporters

Only registered exporters can purchase dry beans. Each exporter must be licensed for each port in which it operates. For the 1989–90 cocoa year, ten companies were registered to export cocoa. Most of these companies operate in only one or two locations, while two of the bigger companies operate in a number of areas. The exporter must satisfy the Board that its facilities are clean and adequate in size, that adequate finance is available to the company, that the company's management is competent and knowledgeable, and that the company has the support of the people in each location in which it operates.

Some of the conditions which are attached to an exporter's licence are:

- The storage sheds must be constructed and maintained at a standard approved by the inspectors of the Cocoa Board or DAL.
- Floors of storage sheds must be kept clean.
- Storage sheds must be kept free of insect pests.
- All bags of cocoa must be stored on pallets.
- Off-grade cocoa and cocoa residue must be stored separately from export quality cocoa.
- All cocoa beans, nibs and residue must be fumigated before shipment.

Similar to a fermentary owner or dealer, an exporter's licence can be suspended if any conditions are violated, and the owner fined and/or imprisoned.

Appointment of inspectors

The Cocoa Act enables the Board and the Minister for Agriculture and Livestock to appoint inspectors at both the national and provincial levels. Cocoa Board inspectors have wide-ranging powers to examine the premises of any fermentary owner, dealer or exporter; to examine any documents relating to these businesses; and to gather evidence and prosecute people in violation of the Act or regulations. Anyone who obstructs an inspector performing these duties may be fined and/or imprisoned. In addition, the inspectors advise growers on fermenting and drying techniques, and advise dealers on how to operate their business.

Inspectors appointed by the Minister are generally employed in the DAL's animal/plant quarantine service. Their job is to inspect the cocoa in accordance with the standards specified in the Cocoa Regulations and ensure each shipment has been properly fumigated prior to export.

The cocoa grading system

Cocoa is graded twice prior to export—initially by the exporter when purchased from the grower and later by a quarantine inspector (see Figures 9.1 and 9.2). It is stored in new jute bags, and each bag should contain 62.5 kg of cocoa beans. When delivering cocoa to an exporter, the grower first goes to the exporter's quality assessor who checks the bags to see if they are new and clean, clearly marked with the fermentary's registration number and properly sewn. From the consignment, a sample of the bags is weighed to ensure that their weight is close to 62.5 kg. If the bags are significantly underweight, the grower must take the cocoa back and top up the weight.

For many consignments, one bag is opened and the beans poured out over a flow sampler (a wire mesh grill on a wooden frame). This allows the exporter to check for foreign matter. The cocoa of a number of growers and plantations is not checked on the flow sampler because of a long tradition of supplying excellent grade cocoa to their overseas buyers. The exporter trusts these growers well enough not to check their cocoa for foreign matter prior to shipment.

On all consignments, a bag stabber is used to collect random samples of beans from as many of the bags as possible. The bag stabber cannot adequately check for foreign matter. From the sample of beans, 100 beans are randomly selected and cut lengthwise. The number of slaty, flat, shrivelled, germinated or otherwise defective beans are counted and converted to percentages. Following the cut test, a sample of the cut beans is ground up in a blender and smelled by the assessor to see if there is any smoke or other foreign odour in the consignment. A moisture meter is used when necessary to measure the level of moisture in the sample.

Figure 9.1 Cocoa quality control system in Papua New Guinea

Figure 9.2 Cocoa quality assurance system in Papua New Guinea

The standards for acceptable export quality cocoa are listed in the Cocoa Regulations as follows:

- be free from foul or foreign odour;
- contain not more than 1 per cent by count of slaty beans, or not more than 5 per cent by count of flat, double, broken or germinated beans, or not more than 5 per cent by count of defective beans, or not more than 1 per cent by weight of foreign matter;
- contain a moisture content of between 5.5 and 7.5 per cent by weight.

Following these tests, the exporter's quality assessor then determines whether the consignment meets the standards of 'export quality cocoa'. If the standards are met, then the grower is issued with an acceptance report; if not, the grower is issued with a rejection report. Both types of report record the name of the fermentary owner, the fermentary number, the locations of the grower and the exporter, the number of bags and, in the case of rejected cocoa, the reasons for rejection. All reports are returned to the Cocoa Board, and the inspectors check any fermentary which has produced significant quantities of rejected cocoa.

For acceptable cocoa, the grower receives the full market price. The Cocoa Board monitors exporters' f.o.b. prices and the prices paid to growers, and can detect reasonably well if exporters are underpaying growers. For rejected cocoa, the growers receive a lower price. The discount between good and bad quality cocoa varies substantially because of the range of defects in the cocoa and because the price will depend on the demand at that specific time for off-grade cocoa. As an indication, however, a major exporter recently quoted a discount for off-grade of 17–33 per cent from the price of good quality cocoa. The 17 per cent discount is for the least serious defect, insect infestation, while the 33 per cent discount is for smoke contamination, which is the worst defect. A second exporter quoted a flat 50 per cent discount for off-grade cocoa regardless of the type of defect. The discount is a substantial incentive to produce good quality cocoa, because a reduction in price of 17–33 per cent or more effectively reduces profit to zero, particularly at current price levels.

At regularly scheduled times prior to export, quarantine inspectors take random samples from the cocoa in each exporter's shed and perform the same tests as the exporters' assessors. After testing, the inspectors stencil a red triangle on bags of export quality cocoa and a green stripe on bags of rejected cocoa. The grading by the government's inspectors is final, although the exporters may appeal against the judgment. It is in the interest of the exporting firm to reject poor quality cocoa because it risks paying a higher price for export quality cocoa and later having it graded as reject cocoa by the government's inspectors.

Before the cocoa is loaded onto a ship for export, it must be fumigated and if necessary, the hold of the ship is fumigated. A private company provides the fumigation service, and the quarantine service observes the fumigation process and issues a certificate of fumigation. This certificate is included in the documents to the buyer, a copy of which is received by the Cocoa Board with other documents from the Customs Bureau.

Copies of all acceptance and rejection reports, together with the quarantine service's reports, are lodged with the Cocoa Board, and the information from each report is entered into a computer database. The rejection reports are used by the Board's inspectors to identify fermentaries producing poor quality cocoa. The database can be used to provide information on production of acceptable and rejected cocoa in each of the provinces month by month. The database may also be linked to a second database of all the registered fermentaries in the country. This provides information on production by smallholder and largeholder. Monthly production by an individual fermentary can also be extracted from the database and examined.

Recent initiatives to improve cocoa quality

Three recent initiatives by the Cocoa Board may have far-reaching impacts on quality. These are the Board's involvement in establishing a cocoa quality management system, in initiating the Australian International Development Assistance Bureau (AIDAB)-funded Cocoa Quality Improvement Project, and in initiating and funding a cocoa breeding program which emphasizes cocoa quality as a key criterion in the breeding selection process.

Flavour potential of cocoa is genetically determined and the cocoa breeding program is trying to recognize and identify the flavour characteristics of parent trees and to trace their heritability. Other characteristics important to the chocolate manufacturer are also included in the research program, namely, shell percentage and cocoa butter content. Thus, this program endeavours to respond to the demands of the market and improve the competitive position of Papua New Guinea cocoa.

The goal of the Cocoa Quality Improvement Project is to improve the quality of Papua New Guinea cocoa in the export market through a program of assistance for research and extension. The project is due to commence research and extension activities in 1991. The emphasis of the research component will be applied research into fermentation and drying. The emphasis in the extension component will be on the establishment of a support system for extension, information and training to assist the Cocoa Board and provincial extension services in improving cocoa quality.

The Papua New Guinea Cocoa Board played a key role along with the Department for Agriculture and Livestock (DAL) and New Zealand (who provided technical assistance) in the introduction of the Cocoa Quality Management System (CQMS) in July 1988. This system largely privatized the cocoa produce inspection system and thus increased self-regulation of the industry.

The principle of the CQMS is that production of export quality cocoa beans is a responsibility shared between cocoa growers, wet bean dealers, cocoa

exporters, the Cocoa Board and the DAL. The system has two components: a quality control system, and a quality assurance system.

As outlined above, the quality control system clearly identifies the responsibilities of all those in the marketing chain and provides a system of checks. The quality assurance system ensures that the cocoa complies with overseas quarantine entry requirements and quality standards.

The main advantages of the CQMS are:

- Quality control and quality assurance requirements of the export of cocoa beans are integrated as components of a single management system.
- The cocoa industry (growers, dealers, traders and exporters) can exercise standardized controls over export cocoa quality through direct involvement.
- Effective operation of the system provides greater assurance for continued access to overseas markets at better price levels.
- Advice on production, marketing, overseas import requirements, crop protection, and research and development is coordinated within an established communication system.
- Roles and responsibilities of the parties involved in cocoa bean export are clearly defined.

In a survey carried out in 1989, general satisfaction was expressed with the operation of the CQMS although several improvements were suggested, including more thorough final inspections by the DAL, refresher courses in quality management and on-the-job training of assessors.

Difficulties in enforcing quality standards

The major difficulty of the CQMS is to enforce standards with only five Cocoa Board inspectors. The annual registration of over 2,000 fermentaries and over 1,000 dealers involves an enormous amount of paper work, and it is impossible for a Board inspector physically to examine every fermentary and buying point in the country each year as well as exporters' facilities in the port areas.

Consequently, the Board has to rely on officers from the provincial office of the Department of Primary Industry. Each cocoa-growing province has a cocoa coordinator and each district within the province has a cocoa officer. These officers and the coordinator provide Board-approved fermentary designs to growers, inspect the fermentaries for registration each year, and assist the growers to prepare their registration papers. They in turn advise the Board on whether the fermentary meets the standards of the Board.

Similarly, in those ports outside the two major ports, the exporters' facilities are examined by quarantine inspectors. Every port has quarantine staff whereas only two major ports have Cocoa Board inspectors.

By relying on staff from other organizations to inspect facilities, the Board does not have full control over the application and renewal procedures. This

leads to delays and miscommunications. Often, the provincial officers are poorly informed about registration conditions, procedures and the laws on cocoa quality and regulation.

Many cocoa growers, wet bean dealers and the provincial cocoa officers are poorly informed about proper fermentation and drying techniques and the management aspects of running a dealer's business. Many dealers do not know how to calculate their operating costs and determine how much they can afford to pay for wet beans. There is a strong need for training in these areas. The Board's inspectors conduct occasional courses of one to two weeks duration in the provinces. However, the costs of conducting these courses are high, and the Board can afford only a few each year. The provincial extension officers should be handling these courses, but for various reasons are unable to.

The Board could employ more staff and locate them in the provinces, but this would increase its costs at a time when it is trying to control spending. The Board collects a levy on each tonne of cocoa exported. Roughly 25 per cent of the levy is used to carry out Board functions and the other 75 per cent is granted to the Cocoa and Coconut Research Institute of which the Board is a major shareholder. If the Board spent more on quality control and inspections, the research institute would lose income. Foreign aid for the Institute and the Board is actively being sought, but bureaucratic inefficiencies in the national government have made this extremely difficult.

The grading system is still not as effective as it should be. The current system was introduced in 1988. Prior to this growers delivered their dried cocoa to the quarantine service where the quarantine officers would inspect it, issue either a pass or fail certificate, and mark the bags accordingly. The grower then delivered and sold the cocoa to an exporter who was not required to inspect it. This system did not function properly and too much poor quality cocoa was passed as good quality. The exporters and overseas buyers complained, and the good reputation of Papua New Guinea's cocoa was endangered.

The new system was put in place primarily because it was believed that those who have a financial stake in the value of the cocoa would want it graded properly, and that the grading should be verified by an independent government department. This should give assurance to foreign buyers that the grading is reliable.

Implementing the new system was not difficult, although exporters did complain about added costs in staff and facilities. However, these costs are not great and the benefits of the new system are probably being passed back to the growers in the form of higher prices. There were savings for the government as the quarantine service has reduced staff, equipment, vehicles, buildings and houses.

There is controversy over whether the new system is actually catching all the low-grade cocoa being delivered to exporters. According to the Board's statistics, only about 0.8 per cent of the cocoa delivered to exporters in 1989 was rejected as low-quality cocoa whereas about 2 per cent of cocoa bean exports in 1989 were

off-grade beans and nibs. A number of people in the industry believe that the percentage of low-grade cocoa should be closer to five per cent or more of total exports, and that low-grade cocoa is being supplied to overseas buyers as good-quality cocoa. Unfortunately, there are very few data on which to make a judgement. The Cocoa Board's inspectors have begun randomly checking cocoa samples after the inspections by the quarantine service, and this has revealed that there is some sub-standard cocoa being passed as export quality cocoa by both the exporters and the quarantine service. Clearly, there is a need for more training of quality assessors and more stringent control of those assessing the quality.

CHAPTER 10

A case for the continued operation of a monopolistic marketing enterprise: copra marketing in Papua New Guinea

Joe Bae and Hugh Coulter

Many governments have established commodity boards for agricultural exports following the argument that the private sector could not manage internationally-traded commodities and that farmers would get fairer prices through government-controlled monopolistic marketing boards. For a number of reasons international opinion has recently shifted:

- Marketing boards in many countries have become very inefficient (and even highly incompetent) in their business operations of purchasing, storing, processing and marketing internationally; as a result, farmers have not received appropriate prices for their products. Because of the lack of competition, there is little incentive for boards to become efficient, use the latest technology and actively pursue the best overseas markets.
- A disturbing number of marketing boards have become corrupt, with board members or staff being the major beneficiaries of board operations rather than farmers.
- The belief that private enterprise will exploit farmers and give them a lower price has proved wrong; the marketing of agricultural products by competitive private enterprises often gives farmers better prices.

International opinion, and the opinion of many governments and international development agencies, has therefore turned strongly against commodity marketing boards. Several countries have abolished marketing boards or sold them to private enterprise (privatization).

However, some marketing boards have changed their structure and operating methods to keep up with private sector business methods, processing techniques and modern international marketing methods. Many are no longer monopoly purchasers and marketers, but act to regulate quality, administer stabilization schemes and assist the industry generally. These boards must

continually improve and change to meet the changing needs of the industry. There is certainly no room for complacent or inefficient marketing boards in today's economic climate.

Privatization programs have become a key policy measure in many Pacific countries and have been strongly promoted by the multilateral and bilateral aid and donor agencies. A key question is what is the objective of privatization? If it is advocated on purely ideological grounds (i.e., transfer of ownership to the private sector for its own sake), then this is basically a matter for political debate. However, if the objective is to improve efficiency, then privatization is not the only or most effective means.

A number of approaches to improving efficiency could be introduced. Examples include:

- introducing corporate plans which reflect commercial objectives, government objectives and financial realities;
- introducing competition into some activities of state-owned enterprises, or allowing private firms to compete alongside state enterprises; and
- privatizing by transferring the ownership of state enterprise to the private sector.

While experience elsewhere has shown that there is a very strong tendency for marketing boards to become inefficient, they may not, if the gains from economies of scale exceed any possible losses from the monopoly position, and if well-defined systems for financial and technical accountability are in place. The situation of the Copra Marketing Board (CMB) in Papua New Guinea is examined in this paper to demonstrate this point.

Profile of the Copra Marketing Board

Copra is produced in all sixteen coastal and inland provinces of Papua New Guinea, but four provinces (North Solomons, East New Britain, New Ireland and Madang) produce most of the country's copra. The plantation sector was traditionally dominant; however, the smallholder sector overtook it in 1979 and now accounts for about 60 per cent of production.

The Copra Marketing Board was established in 1954 to take over the operations of the Australia New Guinea Production Control Board (ANGPCB), a production board set up in 1943 to process copra and rubber which were vital to the war efforts. Prior to the establishment of CMB there was considerable debate on whether or not the copra industry should be deregulated. Considerations included:

- distrust of the large companies which operated a marketing oligopoly before the second world war (Jackman 1987);

- the need for a single marketing body to oversee a nine-year contract with the British Ministry of Food;
- the desire to avoid a repeat of the demise of the rubber industry in 1948, when growers faced a collapsed market when contracts were lifted;
- export regulations which required a body such as a board to administer them;
- a view that the ANGPCB had done an efficient marketing job;
- the need to protect the village producer who was in a much weaker bargaining position than the planters;
- the fact that the ANGPCB was established under war-time emergency conditions as a temporary measure whereas marketing arrangements should be designed to reflect peace-time needs; and
- Australia, which was administering Papua New Guinea at this time, was 'smitten by the commodity board bug' and spread the 'infection' to Papua New Guinea.

The 1952 Copra Marketing Board Ordinance was the legal base for the CMB, but the legislation was revised in 1974 and 1983. Under the current legislation, the CMB is the sole exporter of copra—the Act empowers it to register other copra exporters, but to date no other copra exporters have been registered.

The CMB is empowered under the legislation to acquire and sell copra, and to manage and control all matters relating to the handling, storage, protection, treatment, transfer, shipment, sale or disposal of copra. It is responsible for determining growers' prices and the terms and conditions of sales in export markets. The CMB has no regulatory control over the domestic marketing of copra prior to delivery to one of its sixteen depots.

For a full description of the operations of Copra Marketing Board, and recent suggested changes to these operations, see Coulter (1990, 1991).

Arguments supporting monopolistic operations

The image of the monopolistic trading enterprise as a monolithic animal of a bygone day should be dispelled. It is alive and well and thriving in Papua New Guinea. There are five considerations which clearly demonstrate that marketing arrangements should continue in their present form which are discussed in this section.

Economies of scale

A large marketing organization has distinct advantages through economies of scale, particularly for a commodity like copra in which marketing costs are directly related to the volume handled. This can be shown by examining the operating-cost structures of the various copra marketing boards in the Pacific region. Figure 10.1 compares the unit costs

Figure 10.1 Comparisons of copra marketing costs in 1988

Sources: Papua New Guinea Copra Marketing Board; Solomon Islands Commodities Export Marketing Authority; Western Samoa Copra Board; and Tonga Commodities Board.

of four countries (obtained by dividing total costs for 1988 by the tonnage of copra sold). Papua New Guinea, with sales of 133,198 tonnes in 1988, had by far the lowest unit costs of US\$22.38/tonne (K19.63/tonne). Solomon Islands had the next lowest costs of US\$37.92/tonne on sales of 29,046 tonnes, and Tonga had the highest unit costs of US\$77.52/tonne on sales of 2,250 tonnes.

Figure 10.1 clearly demonstrates that if a number of exporters were to become involved in marketing Papua New Guinea copra, marketing costs per tonne would probably increase and grower prices would be reduced.

Nature of the commodity and its markets

The second issue to consider is the homogeneous nature of copra in contrast to the heterogeneous nature of other export crops, such as cocoa and coffee. This has been summarized succinctly in the World Bank 1966 *Report on the Economic Development of the Territory of Papua New Guinea*. (Although the report is old, the comments are still true today.)

Coffee and cocoa differ materially in their marketing needs from copra and rubber. The latter are saleable on the international markets according to well recognized and (limited) grades. There is no need to preserve the identity of individual lots of the same grade so that bulk handling is possible. In the case of coffee and cocoa the position is radically different. Apart from minimum requirements in respect to size of bean, colour and freedom from impurities, grade does not reveal finer quality characteristics. Sale is often by sample or the reputation of previous sales. Identity of shipments has to be preserved until they reach the end-user whose price is related to quality aspects meeting his special needs. Rewards for quality can be substantial. The search for end users who will pay for quality and the establishment of new markets function quite differently from that of marketing bulk-type commodities to which the marketing board approach is well suited. Cocoa and coffee appear to be sold most satisfactorily through private merchants or agents.

There is very little differentiation with copra. On an international basis it is marketed to a limited number of companies world-wide who in turn sell the copra to the crushing industry for processing into oil and cake.

The world market is a three-tiered structure. The first tier is represented by the marketing boards and other copra marketing institutions. The second tier is represented by the purchasing organizations such as Fischell, Unilever (and associated companies), Fuji and the 'spot' market (e.g. Singapore). The third tier is represented by the crushers.

The second tier is an oligopsony. It could be argued that there is scope for collusion in price fixing but, given that copra price is basically derived from coconut oil and meal which are themselves determined in a free world market, price fixing is unlikely. With only a small number of purchasers, it is important that sellers negotiate from a position of collective strength and this is exactly what the CMB does.

The issue of oligopsony has been discussed by Bastin (1986:37) who offsets any costs involved against the benefits of risk reduction.

There is no doubt that the present marketing system does deny producers some freedom of action, both domestically, where farmers sell to marketing boards, and internationally, where the 'second tier' of traders operate. However, the costs of this loss must be offset against the benefits of minimizing risk.

Physical commodity markets differ from other consumer markets in that demand is not continuous; at any time it can be positive, negative or zero. Traders, able to adopt 'long' (bought) or 'short' (sold) positions, carry the difference and balance the equation between supply and demand.

Copra trading, by the very nature of long shipment periods and the requirement that most marketing boards are long in the material, involves systematic risk. The risk involves holding large supplies of copra at a time when the market price is falling, thus risking substantial losses on the trading account. International traders face the same risks, but some advantages: communications and information are the lifeline of markets where prices can fluctuate \$50 to \$100/tonne in a matter of hours, and most coconut producers are far from the CNO and copra markets in Japan, London, Rotterdam and New York. Equally traders work several markets, laying off risks in one against those in another ('hedging'). Coconut producers cannot do this, since they tend to trade in only one, or two commodities.

Another aspect is the risks attached to shipping, meeting deadlines and documentation. Practical arrangements are handled by the second tier which raises Bills of Lading, arranges freight and makes complicated 'book' adjustments so that buyers' requirements are met. For example, a day's delay in loading can result in a Bill of Lading dated October rather than September. This could result in a lower price or a refusal by a buyer on the grounds of default. Traders can overcome these difficulties.

Freight rates

A large marketing organization has a stronger negotiation position with shipping companies. The CMB has demonstrated this bargaining advantage and has negotiated more competitive rates for copra than have cocoa or coffee exporters. Cocoa and coffee exporters seldom, if ever, have negotiated on a united front with shipping companies. A comparison of copra freight rates with cocoa freight rates is shown in Table 10.1.

The CMB takes a longer-term view of shipping rates whilst cocoa and coffee exporters are, invariably, more concerned with their own short-term needs. Cut-price shipping companies come and go in Papua New Guinea, but their rates are seldom sustainable over the longer term.

Conference lines are the main shippers of copra to Europe.¹ The CMB maintains a relatively strong bargaining position when negotiating freight rates each year because of the importance of copra to the liner trade. As copra is produced year-round, it is not subject to the seasonality of cocoa and coffee. It creates a basic demand for commodity shipping on the Pacific-Europe route.

Table 10.1 Comparison of shipping freight rates for Papua New Guinea copra and cocoa, 1981–90

Year	Copra Europe US\$	Cocoa Europe US\$
1981	83	138
1982	83	
1983	81	
1984	80	
1985	80	169
1986	81	
1987	81	
1988	83	
1989	83	
1990	83	142

Sources: Papua New Guinea Copra Marketing Board and Cocoa Boards.

Table 10.2 Copra freight and Papua New Guinea Copra Marketing Board operating and marketing costs as a percentage of copra c.i.f. price, 1981–88

Year	Freight US\$/tonne	CMB costs Kina/tonne	Exchange rate US\$/kina	CMB costs US\$/tonne	Copra price (c.i.f.) US\$/tonne	Freight to c.i.f. price (per cent)	CMB costs to c.i.f. price (per cent)
1981	83	13.75	1.47	20.21	379	21.9	5.3
1982	83	12.85	1.34	17.22	314	26.4	5.5
1983	81	14.58	1.14	16.62	496	16.3	3.4
1984	80	14.05	1.06	14.89	710	11.3	2.1
1985	80	14.55	0.99	14.40	386	20.7	3.7
1986	81	15.45	1.04	16.07	197	41.1	8.2
1987	81	16.04	1.14	18.29	309	26.2	5.9
1988	81	18.17	1.14	20.71	398	20.9	5.2
Mean	81	14.93		17.30	399	20.4	4.3

Source: Papua New Guinea Copra Marketing Board.

1 A conference line is a group of shipping lines operating as an entity.

Introducing private exporters into the copra marketing system would increase freight rates. This has been confirmed in personal communications with one of the major conference lines which advised that freight rates would rise, because of increased handling and administration costs, if they had to deal with a number of copra exporters in Papua New Guinea as with cocoa or coffee. As shipping is the major cost involved in copra marketing (almost five times the Board's operating and marketing costs (Table 10.2)), an increase in freight charges would negate offset any marginal (and unlikely) benefits from improvements in the efficiency of the domestic marketing system as a result of increased competition. Any changes in the marketing system which reduce the CMB's bargaining power with shippers will have a detrimental effect on the price the grower receives.

Financial and technical efficiency

The lack of competition facing a monopolistic public trading enterprise can lead to inefficient operations. However, there is no indication that the financial efficiency of the CMB has been reduced or impaired by the absence of competitive pressures. Figure 10.2 demonstrates that while nominal costs have increased at a modest rate over the ten-year period 1979-89, these costs have actually declined in real terms. Similarly, unit costs have declined in real terms over the same time period, as illustrated in Figure 10.3.

There are no explicit financial reasons to assume that privatization would lead to greater efficiency. A state-ownership marketing organization maintains the cost advantages of a single supplier while avoiding the problems associated with a private monopoly. It also has the potential to take a longer-term view of marketing needs and opportunities than private counterparts.

Exporters' margin as a percentage of the f.o.b. price has been used as a crude measure of export efficiency to compare the CMB's margin with cocoa and coffee exporters' margins (Table 10.3). It can be seen from Table 10.3 that the CMB is more efficient than private coffee and cocoa exporters in terms of margin as a percentage of f.o.b price.

Table 10.3 Export marketing efficiency of the Papua New Guinea Copra Marketing Board compared with coffee and cocoa exporters

	CMB ^a (per cent)	Coffee exporters ^b (per cent)	Cocoa exporters ^c (per cent)
Exporters' margin as percentage of f.o.b. price	7.1	15.4	9.6

Sources: ^a Papua New Guinea Copra Marketing Board records, 1981 to 1988.

^b Five-year strategy development plan for the coffee industry prepared by McGowan International Pty Ltd, October 1985 to September 1988.

^c Board economist's estimate for 1988 and 1989 based on 2-month lag between the d.i.s. price and f.o.b. price.

Throughout the Pacific coconut countries, the CMB has a solid reputation for financial and technical efficiency. This is demonstrated by the fact that most of the other Pacific coconut countries have sent their key staff to it for training.

Price characteristics

Papua New Guinea is a small producer of coconut products and a price-taker on the international market. Copra prices are determined in the first instance by the supply and demand for coconut oil, but in an international market where most oils are increasingly interchangeable, prices are influenced by the demand and supply inter-relations with other oils and fats. These oils and fats derive from vegetable, animal and marine sources, but vegetable oils account for over 80 per cent of world oil trade. Within the vegetable oil sector seven oils derived from soybeans, oil palm, coconuts, groundnuts, cotton seed, sunflower seed and rape seed, account for nearly 90 per cent of world production and over 90 per cent of world trade.

The demand for oils has traditionally come from edible and household uses (e.g., margarine, cooking oil and soap/detergent-making). More recently, industrial

Figure 10.2 Papua New Guinea Copra Marketing Board total operating costs, 1979–89

Sources: Papua New Guinea Copra Marketing Board.

Figure 10.3 Papua New Guinea Copra Marketing Board unit operating costs, 1979–89

Sources: Papua New Guinea Copra Marketing Board.

demand has substantially increased (e.g., for paints, varnishes, plastics, lubricants and cosmetics).

The vegetable oils market has always been unstable, but changes into soybeans in the United States and Brazil, rape seed in Europe and oil palm in Malaysia and Indonesia have been recent destabilizing factors. Many fats and oils are by-products of oilseed meal and if meal demand is strong, supply of vegetable oils increases and destabilizes the market. Recent analysis by the World Bank has shown copra (and coconut oil) to be among the most volatile major international agricultural commodities.

World prices of oilseeds and their products are determined by the interaction of supply and demand, although trade barriers can have an impact. As a general rule, price differentials between oilseeds reflect their relative oil content and/or meal content and the strength of the market for these products. World prices for the different vegetable oils are highly correlated which indicates that the oils are readily interchangeable. For example, palm kernel oil and coconut oil have a correlation coefficient of 0.989 while palm oil and coconut oil have a correlation coefficient of 0.933. A key feature of oil prices is their downward trend in real terms due to huge increases in supply of several oilseeds, encouraged by technological improvements and protectionist policies (notably, in the EC and USA). The annual price decline for copra has been -4.2 per cent over the period 1970-1988 compared with -5.3 per cent for coconut oil. Price projections indicate that prices will remain around their present levels, which are low by historical standards.

The processing margin between coconut oil and copra has also declined. This is presumably the result of increased processing efficiency and lower costs in the processing phase. For Papua New Guinea, this means that the benefits from processing oil rather than selling copra will probably continue to decline in real terms in coming years.

From this price analysis it would seem inappropriate to make any major change to the marketing system in Papua New Guinea. The current system has shown itself capable of weathering international price volatility, albeit with some government assistance for producers in recent years; and it has adapted to declining trends by improving performance. A marketing system with private copra exporters will invariably have some failures when faced with price troughs, leaving some growers in very exposed positions.

Efficiency improvement measures

The CMB has no intention of resting on its laurels and is continually looking at ways to improve its efficiency. Three measures are currently being considered:

- The CMB should be representative of interests other than just growers and should include management agents, processors and other organizations servicing the coconut industries.

- The CMB should be subject to technical as well as financial accountability. Some 'watch-dog' or independent body should regularly review its technical operations.
- The CMB should develop an international marketing strategy for coconut products.

Industry representation

There is a need for the CMB to become more industry-oriented. Its decision-making role would be enhanced by representation of interests other than producers. These representatives should be elected to avoid the familiar criticism of political influence. A prerequisite to elections is the formation of specific industry associations (e.g., smallholders, plantations and processors) if they do not already exist.

The coffee industry is already pursuing this approach with the proposed establishment of the Coffee Industry Corporation (CIC), comprising elected representatives from all facets of the industry. The CIC will be registered under the Companies Act as a private company which will 'take over' the Coffee Industry Board (CIB), Coffee Research Institute and the Coffee Development Authority as separate divisions. The CIB will retain its statutory powers to control and regulate the industry under legislation similar to the present. The CIC will be funded by an export cess and incidental revenue, including licence fees. The government will augment the operational budget of CIC, particularly in low price periods.

Regular review of technical operations

Whereas the financial operation of the CMB is reviewed annually by the Auditor General, the technical aspects are ignored (unless they affect the financial situation in an adverse manner). Certain decisions by the CMB in recent years are questionable on economic grounds. A case in point is the decision against undertaking trials in the production and marketing of edible cup copra—a decision about which some growers were most vocal in their opposition. The CMB therefore should be subject to technical accountability for its impact on growers' welfare and national interest and this would be best accomplished by employing an external specialist.

Corporate planning

Experience elsewhere has shown that a public trading body such as the CMB can continually improve efficiency without resorting to a change to private ownership. One such measure to improve efficiency, which is currently being considered, is the introduction of corporate plans.

It is desirable that corporate plans be introduced, but reviews of the following must be undertaken prior to the development of these plans:

- the relationship between the CMB and the government and their respective medium-term goals; and

- present CMB operations, including financial, pricing, handling, transport and other marketing arrangements, problems and recommendations.

CMB objectives should be defined in terms of the policies and strategies which would be followed in pursuing its goals. The operations necessary to implement these policies and strategies should be specified, along with the resources needed to carry out the operations and the method by which the resources would be obtained.

Corporate planning would be planning the deployment of the total resources of the CMB for the achievement of the broad goals within a set time frame. Goals would include investment plans, prices, marketing aims, and institutional and social goals.

As an adjunct to corporate plan performance, targets would be set which could be closely monitored. They would provide a basis on which financial incentives to management and staff could be determined. Industry should also be consulted where there is a deviation from present practices to ensure that what is being proposed is acceptable to those affected by the plans.

International marketing strategy

There is no cohesive approach to international marketing of any of the export commodities in Papua New Guinea at present. Discussions with some of the exporters indicate that the emphasis is on selling, not marketing of the commodities. However, other countries have been developing marketing strategies—Malaysia in particular—and if Papua New Guinea is to retain its present position in the international market, let alone expand, it must take a more dynamic role in market promotion.

The Copra Marketing Board is currently undertaking a copra quality improvement program involving the introduction of improved dryers. It is essential that remunerative markets are identified where quality is rewarded and the virtues of the quality improvements can be promoted.

One of the objectives of a marketing strategy is to establish a system to identify, develop, implement and evaluate promotional measures. These measures would ensure that the coconut industry becomes more competitive, with greater market penetration of existing markets and the development of new markets. It is also a goal that the benefits from quality improvements accrue to people within the country.

Industry consensus is vital to the realization of an international copra marketing strategy. It is envisaged that the CMB will take the initiative, and will promote industry consensus through organizing workshops and individual discussions with key organizations. It would also be necessary to establish an organizational system involving representatives from the various industry bodies—perhaps a committee—for the formulation of the marketing strategy. This committee must have clearly defined responsibilities, reporting requirements and time frames for implementing various phases of the strategy.

Data would also be collected and reviewed to provide the basis for evaluating the strategy.

The next stage would be the development of the marketing strategy, including the identification of promotional measures and market profiles. Particular attention would be focused on niche markets which have emerged as an important concept in international commodity trade.

During the implementation stage of the strategy, promotional material such as brochures and newsletters would be prepared. Participation in trade fairs and communications with commodity associations (e.g., the Federation of Oils, Seeds and Fats Associations Ltd and the Asian Pacific Coconut Community) would be encouraged.

Evaluation would involve periodic assessment to ensure flexibility of the strategy so that the Board is able to meet changing conditions. A more comprehensive evaluation would be required at the end of the strategy period to assess the achievements and effectiveness of the strategy against original objectives and targets.

Conclusions and recommendations

The foregoing analysis indicates that there is no *prima facie* case for the privatization of Papua New Guinea's Copra Marketing Board or for introducing competition through the registration of copra exporters. However, that is not to say that there is no room for efficiency improvements. Certain decisions by the CMB in recent years must be questioned on economic grounds.

On the technical front there appears to be scope for the CMB to explore and promote value-added coconut products, but not to get involved in the actual processing. Papua New Guinea has probably the worst record of the main Pacific coconut countries in developing these markets (Australian Centre for International Agricultural Research 1988).

The Coconut Products Oil Mill in Rabaul is the only profitable (relatively) large-scale oil mill operating in the Pacific. Returns to growers could be improved by encouraging the mill to operate at capacity and by negotiating a price premium on the additional copra required for capacity processing.

The CMB should consider an 'in-house' approach to improving the efficiency of operations by developing corporate plans in line with government and commercial objectives. The plans should be medium-term programs designed to achieve the broad objectives of the CMB, including investment plans, prices, marketing strategy, productivity targets and social objectives.

The CMB should also commission independent efficiency reviews on a regular basis which would include both financial and technical aspects. These reviews would not only compare actual financial, pricing and marketing performance with targets, but also examine ways to improve handling, transport and management practices, and provide technical advice on marketing and

processing opportunities. The structure, size and role of the CMB should also come under review periodically to ensure that it continues to provide the support necessary to develop the coconut industry.

There is a need for the CMB to become more industry-oriented. While the government should have representation on the CMB, the industry should elect the other representatives. This would avoid the familiar criticisms of political appointments to the commodity boards. Representation of interests other than producers would also enhance the decision-making role of the CMB. Its members should be drawn from producers, processors, research and extension services, the banking sector and management staff.

Papua New Guinea has had a long history of successful institutional involvement in commodity marketing, and the Copra Marketing Board has been at the forefront of these marketing developments. The adoption of the above recommendations would reinforce its viability and ensure its longevity.

CHAPTER 11

Cocoa stabilization in Papua New Guinea: approaches and issues

Christopher Gimbol

In this chapter the operation, strategies and formulae of the Cocoa Stabilization Fund in Papua New Guinea since its inception in 1975 are reviewed. As a result of the depletion of cocoa stabilization funds in May 1989, a government loan was needed to subsidize the producers' price at this critical time. The government cannot continue to support the industry indefinitely and the industry should be able to support itself through peaks and slumps. The important long-term issues for the stabilization scheme are the appropriate fund size and the stabilization formula being used. However, because the loan has accumulated to a huge amount and cocoa prices remain low, the most important issue now before the industry is how to repay the loan with interest over the next few years if required. After that, the long-term issues discussed in this chapter will become important.

Background

Commodity stabilization schemes have been in existence in Papua New Guinea in one form or another since the late 1940s and early 1950s. The first stabilization scheme was established for copra in 1946, and was considered successful in implementing its stated objectives. It was a catalyst for the stabilization of prices of other major commodities and led to the establishment of similar schemes for coffee in 1966, cocoa in 1974, and oil palm in 1983.

Together these export commodities accounted for approximately 30 per cent of total export earnings and between 70 and 90 per cent of total agricultural earnings over the period 1983–88. As roughly 80 per cent of the population in Papua New Guinea depends on these crops as a major source of cash income, the agricultural sector is important to the economy both in product contribution and

employment. Any decisions regarding price stabilization in these export industries affect the majority of the population.

The performance of stabilization schemes may be traced back to the years they were established. The high prices for each of these crops during the first few years after the establishment of the schemes resulted in the collection of levies from growers which were put into the funds. The cocoa stabilization fund had built up to K62.9 million by May 1980, the copra fund stood at K27.8 million in 1984, the coffee fund peaked at K120 million by the end of 1986 and the oil palm fund stood at K9.4 million by end of October 1986.¹ Until the late 1980s, the stabilization schemes were funded by the growers: levies were collected during relatively high prices and bounties paid during relatively low prices.

Figure 11.1 Cocoa fund balance, 1975–90

Source: Papua New Guinea Cocoa Board.

The stabilization fund was exhausted in May 1989 (Figure 11.1) and loans taken out by the Cocoa Board have been used for bounties which have been paid out since June 1989. The amount paid out in bounty by the end of December 1989 was K121 million.

It is interesting to note that actual levies collected from growers over the years amounted to K54 million and interest earned from investments totalled K51 million (Table 11.1). Forty-five per cent of the total bounties paid were from

levies, 42 per cent from bank interest and 13 per cent from the bank loan obtained in mid-1989. Thus, a significant amount was earned from deposits with the banks.

During the period of levy collection, government policy required that 60 per cent of all monies in the fund to be invested with the Central Bank even though the interest rates were not as attractive as those offered by the commercial banks. That policy, however, has been changed, enabling additional income to be earned through interest on those deposits.

¹ Unlike the other crops which have only one fund, the oil palm stabilization scheme has three different funds: one each for Bialla, Higaturu and Hoskins. The oil palm fund comes only from contributions by the smallholders as the estate sector is not a participant in the scheme. It is managed by the Department of Agriculture and Livestock through a private chartered accounting firm.

Table 11.1 Fund balance as at 31 December from 1975 to 1989 (kina million)

Year	Income		Expenditure		Accumulated fund balance
	Levy	Bank interest	Bounty	Fees and charges ^a	
1975	-	-	-	-	-
1976	3.047	0.025	-	-	3.072
1977	21.476	0.483	-	-	25.031
1978	20.880	2.733	-	-	48.644
1979	7.830	3.436	-	0.001	59.908
1980	1.231	4.196	3.547	0.005	61.785
1981	-	4.547	12.491	0.011	53.830
1982	-	6.960	15.294	0.015	45.481
1983	-	5.250	5.692	0.025	45.015
1984	-	4.051	3.046	0.035	45.985
1985	-	4.553	3.393	0.035	47.109
1986	-	5.407	11.941	0.037	40.538
1987	-	5.281	15.764	0.352	29.703
1988	-	3.364	22.159	0.265	10.643
1989	17.001 ^b	0.598	27.769	0.474	(17.001)
Total	71.456	50.885	121.094	1.256	(17.001)

^a Levy to the International Cocoa Organization, management fees and bank charges.

^b Bank loan.

Source: Papua New Guinea Cocoa Board.

International commodity agreements

The two commodity agreements to which Papua New Guinea is a signatory are the International Coffee Agreement and the International Cocoa Agreement. The primary aim of these two agreements is to stabilize prices through bargaining between producer and consumer countries. However, this aim has not been achieved and the organizations have proved unsuccessful in stabilizing prices. The stabilization scheme in Papua New Guinea was set up to supplement the international commodity agreements and to stabilize internal price fluctuations brought about by world market price fluctuations. Papua New Guinea is a small producer among major producers of the world, and does not have a significant influence on the world market prices. Commodity stabilization schemes in Papua New Guinea may be considered insurance against volatile world market prices.

Issues

Since the establishment of the cocoa stabilization fund, only one major review has been undertaken by Wheeler and Wyatt (1978). The Australian Bureau of Agricultural and Resource Economics conducted a major study of all commodity stabilization schemes in 1986, but it contained little on cocoa (Australian Bureau of Agricultural and Resource Economics 1990). Although there have been reports signalling the dangers of fund depletion or excessive build-up, little attempt has been made to address these issues.

This chapter brings together the available information on the Cocoa Stabilization Fund in Papua New Guinea since the commencement of its operations in 1975. It includes stabilization objectives and alternative strategies, the history of the stabilization fund (operations and formulae) and the government's price support policies since 1989. Possible modifications to the scheme are suggested at the end of the chapter.

Objectives of stabilization in Papua New Guinea

The objectives of stabilization policy may be seen as ensuring both microeconomic and macroeconomic stability in Papua New Guinea. In the case of commodity stabilization, its foremost aim is to stabilize microeconomic variables such as prices, and thereby growers' income, which in turn contribute to macroeconomic stability objectives. In reviewing the stabilization schemes for coffee and cocoa, Wheeler and Wyatt (1978) outlined four main objectives:

- to stabilize prices to growers;
- to boost growers' incomes in years of below average prices;
- to judge the rate of bounty payments so that the funds last through expected slumps; and
- to ensure that the funds lead to general economic stability.

In so far as the cocoa stabilization scheme has smoothed prices to growers, and thereby stabilized incomes of producers, it has proven successful.

Strategies

Since the establishment of the cocoa stabilization scheme, several strategies have been used to collect levies and pay bounties. The strategy used has depended, to a great extent, on the nature of price fluctuations. The operation of the cocoa stabilization fund may be divided into five periods according to the stabilization strategy used:

- income maintenance (1975–1978);
- price stabilization (1978–May 1989);
- income maintenance (June 1989–November 1989);
- income maintenance (December 1989–present); and
- future operation.

The Cocoa Stabilization Fund: 1975–1989

Income maintenance (1975–1978)

The cocoa stabilization scheme was first based on cost of production—an ambiguous concept because of its changing nature with time. Levies were collected when the price exceeded the floor price, or cost of production, and

bounties were paid when the market price fell below the floor price. This meant that when prices fell below the cost of production, farmers were encouraged not to leave the industry by the bounties paid to offset the difference between the cost of production and the market price. Income maintenance stabilization helped to control macroeconomic variables such as inflation, foreign exchange, interest rates and incomes, and encouraged general economic growth.

Until May 1978, prices were consistently above the support price (i.e., income maintenance price). It was considered undesirable for the growers just to maintain their incomes when they could be taking the full benefit of the high prices. Also during that time, the fund balance quickly built up to reach K48.6 million by the end of 1978 (Table 11.1). The income maintenance strategy was abandoned in 1978 after a review by Wheeler and Wyatt (1978), and changed to price stabilization based on a 10-year moving average.

Price stabilization (1978–May 1989)

Following the review by Wheeler and Wyatt (1978), the concept changed from mere income maintenance to price stabilization based on a 10-year moving average price adjusted to real terms by applying an inflation index expressing the previous 10 years' prices in terms of the most recent calendar year. Two types of deflators were used, the Consumer Price Index (CPI) and the Manufacturing Unit Value (MUV) index. In the early 1980s, the two indexes were combined for deflation purposes.²

Wheeler and Wyatt (1978) outlined two main reasons for adjusting to real prices when calculating the threshold price on which the levies and bounties were based. The first was to ensure equity. The long-term average price would be the starting point for levy collections and also the starting point for bounty payments. Farmers paying levies did so in current terms and consequently expected to receive back the equivalent in current terms.

Second, this approach implies that the prices of cocoa, over a longer term, reflect inflation. While it is impossible to prove this empirically because of major shifts in both the demand and supply of many commodities, there does appear to be some theoretical support. Cocoa does not have any near substitute and consequently its demand tends to be more inelastic than that of other commodities. Thus, *ceteris paribus*, any global increase in costs should produce an upward shift in the supply curve which will be almost fully reflected in the price level.

The threshold price was calculated by taking the previous 120 months of f.o.b. prices (in constant terms), on the belief that 10 years roughly represents one full cycle of international cocoa price movements (Table 11.2). The bounty for the following month was calculated on the last working day of each month. Since actual f.o.b. prices are usually not ready until two weeks after the following month, an estimated f.o.b. price was calculated by summing average daily d.i.s.

2 The use of both CPI and MUV raises several questions about their relevance to a country like Papua New Guinea which is mainly a primary producer and exporter of primary commodities.

Table 11.2 Determination of the 1989 cocoa threshold price using a CPI deflator

Year	Actual f.o.b. price	CPI index (1988=100)	Constant 1988 kina
1979	2167	57.5	3766
1980	1615	64.3	2512
1981	1226	67.9	1806
1982	1113	72.6	1534
1983	1571	78.7	1995
1984	1964	82.2	2390
1985	2020	85.7	2356
1986	1820	90.3	2016
1987	1627	93.0	1749
1988	1219	100.0	1219
Threshold price 10-year average			2134

Source: Papua New Guinea Cocoa Board.

price, export tax of 2.5 per cent (suspended in 1988), management levy (K30/tonne) and exporters' margin. If the calculated f.o.b. price fell below the long-term average price (threshold price), then 50 per cent of the difference was declared as the bounty for the following month (Table 11.3).

Levies were determined in exactly the same way as bounties. If the calculated f.o.b. price was above the threshold price, 50 per cent of the difference was collected as a levy (Table 11.4).

Table 11.3 Calculation of the cocoa bounty

Estimated f.o.b. price	=	Average d.i.s. price for the previous month
	+	Management levy (K30/ tonne)
	+	Export tax of 2.5 per cent of f.o.b. (suspended)
	+	Exporters' margin (4 per cent of f.o.b.)
F.o.b. price	= X	= d.i.s. price + 30 + 0 + .04X
		= 865 + 30 + 0 + .04X
		= 895 + 37
		= 932.

Revised 1989 threshold price	2134
Less estimated f.o.b. price	932
Difference	1202
50 per cent difference	601

Bounty for export quality cocoa	
Kina/tonne	608
Kina/bag	38

Bounty for non-export quality cocoa	
Kina/tonne	304
Kina/bag	19

Source: Papua New Guinea Cocoa Board.

Table 11.4 Calculation of the cocoa levy

Estimated f.o.b. price	=	Average d.i.s price for the previous month
	+	Management levy (K30/tonne)
	+	Export tax of 2.5 per cent of f.o.b. (suspended)
	+	Exporters' margin (4 per cent of f.o.b.)
F.o.b. price	= X	= d.i.s. price + 30 + 0 + .04X
		= 2650 + 30 + 0 + .04X
		= 2680 + 112
		= 2792.

Revised 1989 threshold price	2134
Less estimated f.o.b. price	2792
Difference	658
50 per cent difference	329

Levy for export quality cocoa	
Kina/tonne	336
Kina/bag	21

Levy for non-export quality cocoa	
Kina/tonne	168
Kina/bag	11

Source: Papua New Guinea Cocoa Board.

A buffer zone was established where, if the threshold price was within that range, no bounties would be paid nor levies collected. The buffer zone was set at plus or minus 5 per cent of the threshold price. The threshold price calculated in Table 11.2 is K2134. When the calculated f.o.b. price is within the range of K2027 to K2134, no bounty is paid. When it is within the range of K2134 to K2241, no levy is collected.

Until May 1980, levies were collected in the cocoa stabilization scheme because market prices were consistently above the threshold price (see below). After that date, the stabilization fund began to run down until it was exhausted in May 1989.

Government support: 1989–90

Income maintenance (June 1989 to November 1989)

The exhaustion of the cocoa stabilization fund followed a period of low prices in the world cocoa market which were reflected in domestic cocoa prices. In June 1989, the government stepped in to bail out the industry which was in considerable trouble. It initially guaranteed a K15 million non-interest-bearing loan. However, total drawdowns on this loan stood at K16.5 million by the time the loan facility was terminated in late November 1989. At that time, a new loan was put in place and the stabilization strategy changed. The threshold price, however, was still used and the average daily d.i.s. price for each month was calculated as previously, but the bounty paid was K528/tonne.

The new stabilization strategy (December 1989 to present)

During 1989, the government set up a committee, known as the Cocoa Working Group, following cabinet decision 'to carry out a thorough appraisal of the Papua New Guinea cocoa industry and prepare a long-term plan for its future'. The Cocoa Working Group members comprised representatives from various government departments, statutory bodies, the Cocoa Board and those involved in the industry. The Department of Finance and Planning provided the chairmanship while the Department of Agriculture and Livestock provided the executive officer.

The group submitted its final report to the Secretary for the Department of Finance and Planning who then reported to Cabinet in October 1989. From this report, given the limited data and information available on the industry, two major recommendations were made. Taking into account the importance of the industry to the economy and the population involved in producing cocoa, the recommendations included both short-term support and medium- to long-term industry adjustment.

In the short term, it was recommended that the government provide a loan to the industry to be paid out as a bounty to producers at this time of low cocoa prices. This was to be in place for a maximum of three years but revised

downwards after every six months. In the medium to long term, the report recommended that priority should be given to funding research and extension services. This would increase efficiency and reduce costs to a level equal to or below current world prices. The cocoa industry would then be among the most efficient cocoa-producing countries in the world.

In recommending short-term price support, the report presented two options from which government would choose.

Option 1 The first option was based on the assumption that some dealers/fermentaries operate inefficiently. By adopting a set floor price, those inefficient dealers or fermentaries would be forced to operate efficiently and reduce their costs, or leave the industry. This option set a floor price, or target support price (TSP) for dried cocoa beans at K1152/tonne (d.i.s. price plus bounty). The monthly average d.i.s. price would be calculated in exactly the same way as it had been until May 1989, and the difference between the d.i.s. and support floor price would be topped up by the government. It was hoped that, at this floor price, the wet bean price would be maintained at K0.30/kg.

Option 2 The second option was to retain the cocoa stabilization fund mechanism for calculating bounties (levies) but change the formula. Instead of using a 10-year moving average price in real terms to calculate the threshold price. A 5-year average was recommended. Bounties would be paid on the basis of a two-thirds difference between the new threshold price and the free market price (f.o.b.), instead of the 50 per cent difference used previously from 1980 to May 1989. This would give a dried bean price of around K1300/tonne. Both the published and industry data provided to the working group put the cost of production at around this level.

After receiving the final report from the Secretary for the Department of Finance and Planning, the National Executive Council (NEC) chose option 1, to support a floor price of K1152/tonne. It was implemented in November 1989. This meant that the government had to provide the Cocoa Board with a loan for which it acted as guarantor.

This move by the government forced a change in policy back to income stabilization, based on cost of production, so that farmers would maintain production. The new support price scheme would remain for at least three years from 1989 as long as cocoa prices remained low. When prices picked up and exceeded the floor price of K1152/tonne set by the government, levies would be collected to repay the loan.

A minor adjustment was made to counteract the effect of currency devaluation in 1990. The initial floor price was increased by 4 per cent to K1198/tonne. However, the upward adjustment took place in late March just prior to the scheduled reduction in the support price on April 1, 1990.

Table 11.5 Revised target support price for cocoa, November 1989 to March 1990

Target support price	
(1 November 1989 – 31 March 1990)	1152
Plus 4 per cent allowance for devaluation	46
New target support price	
(1 November 1989 – 31 March 1990)	1198
Average d.i.s. price for the previous month	576
Difference (kina/tonne)	622
Cocoa bounty calculation for December 1989	
Bounty for export quality cocoa	
Kina/tonne	622
Kina/bag	38
Bounty for non-export quality cocoa	
Kina/tonne	311
Kina/bag	19

Source: Papua New Guinea Cocoa Board.

Table 11.6 Schedule and formula of 1990 price support scheme

Date	Reduction
April 1990	15 per cent
October 1990	15 per cent
April 1991	35 per cent
October 1991	35 per cent
April 1992	50 per cent
October 1992	50 per cent
April 1993	No support

Source: Papua New Guinea Cocoa Board.

Under the new price-support scheme, a bounty was paid on the basis of the difference between the prevailing market price and the support floor price of K1198/tonne, as shown in Table 11.5. It was to be revised downwards on a six-monthly basis according to the following formula and schedule (Table 11.6).

Table 11.7 shows that the first adjustment was made on the last working day of March 1990 and effected on April 1, 1990, in accordance with the schedule shown. Average d.i.s. price for the previous five months was calculated, and the difference between this average and the support price of K1198/tonne was multiplied by 15 per cent. The difference between K1198 and this new value was the new support price which remained in force until September 30, 1990. The same procedure for future adjustments will be followed according to the above schedule.

Table 11.7 Revised target support price for cocoa: April 1990 to September 1990

Target support price	
(1 November 1989 – 31 March 1990)	1152
Plus 4 per cent allowance for devaluation	46
New target support price	
(1 November 1989 – 31 March 1990)	1198
Average d.i.s. prices (kina/tonne)	
November 1989	576
December 1989	518
January 1990	568
February 1990	640
March 1990	739
Average	608
Current target support price	1198
Less average d.i.s. difference	590
Reduction in target support price	
Multiply difference by 15 per cent	
(590 X 0.15)	89
New target support price	
(1 April 1990 – 31 March 1990)	1109
Cocoa bounty calculation for April 1990	
Target support price	1109
Less average d.i.s. price for previous month	739
Difference	370
Bounty for export quality cocoa	
Kina/tonne	370
Kina/bag	23
Bounty for non-export quality cocoa	
Kina/tonne	185
Kina/bag	11

Source: Papua New Guinea Cocoa Board.

By April 1991, the accumulated deficit in the stabilization fund had reached over K32 million. All subsequent drawdowns were from an interest-bearing loan, although the loan is actually provided from European Community Stabex funds.

Future options

Until recently, the Cocoa Board was generally satisfied with the operation of the cocoa stabilization scheme. The 10-year moving average used to calculate the threshold price from which bounties and levies were determined appeared to be reasonable in smoothing prices in line with one full cycle of price movement. However, recent events, have cast doubt on the efficacy of the operation of the scheme.

The question of excessive fund build-up or run-down is an issue which has long needed some attention. As pointed out by Ivarami and Coulter (1987), 'the existing formula does not incorporate any provision for a fund that becomes too large or is in danger of running down'. This is exactly what happened in May 1989 when the fund became depleted and the government had to support the industry.

The Cocoa Industry Support Scheme (CISS) was not expected to operate, nor were any provisions made to collect levies, until April 1993. After April 1993, the future of the fund will be reconsidered, as will the appropriate way to collect levies to repay the loan.

Issues

The major issues now facing the Cocoa Board in relation to the cocoa stabilization scheme are how to repay the debt should the government require it, and the type of stabilization strategy most appropriate to use in future when the loan is repaid.

Within just two years, from May 1989 to April 1991, the loan from the government accumulated rapidly. If world cocoa market prices remain low, the loan will no doubt continue to grow, and will take several years to repay it and the interest.

After the loan is repaid, the most appropriate strategy to use (income or price stabilization) should be considered. However, it will be several years before the Board can consider collecting levies to put into the stabilization fund. Two issues that will need to be addressed are the appropriate fund size, and the rate at which bounties are paid or levies collected. When the fund build-up reaches an appropriate level, some minor modifications will be necessary so that excessive levies are not collected. This ensures that, while the price is high, growers continue to benefit and at the same time contribute to their fund for periods of low prices. Assuming that the prices of agricultural commodities are highly volatile, there is no guarantee that they will remain high.

The rate at which levies are collected or bounties are paid would depend on the formula being used. The current formula, which uses a 10-year moving average price in real terms, if used again, would have to specify maximum and minimum fund sizes from which the rate would be modified depending on the market price at the time. In the case of a minimum fund size being reached, the cost of production concept is important in that prices (d.i.s. price plus bounty) received by growers should not fall below the cost of production. This would enable the farmers to receive a margin above their costs and remain in the industry rather than look to alternative industries or wage employment.

Bounty adjustment when minimum fund size is reached

When the cocoa market price falls below the threshold price, two approaches may be considered so that funds last through expected slumps, or do not run out within any one year. First, instead of using a 10-year moving average to calculate threshold price, a 5-year moving average is proposed with bounties to be paid on the basis of two-thirds the difference between the market and threshold prices.

Alternatively, if the fund reaches what may be considered a minimum size, then 30 to 40 per cent of the difference is proposed to be paid as a bounty. This is not to penalize the growers who rightfully own the monies in the fund, but to help the growers get back the money which they contributed during periods of high prices and to ensure that it lasts longer, especially when prices remain low for an extended period. The advantage of this approach is that, in periods of depressed prices, growers continue to receive a bounty over a longer period at lower levels of subsidization. This reduces the risk of exhausting the fund and having to resort to borrowing.

Conclusion

The main purpose in this chapter has been to chart the fluctuating fortunes of the cocoa stabilization scheme since its inception in 1974, and draw some lessons from these experiences. It is recommended that there should be some determination of appropriate minimum and maximum cocoa stabilization fund sizes. This would provide more realistic guides for levy collection or bounty payments. In particular, it would ensure that the fund lasts through market slumps, especially when prices are low for extended periods. The advantage is that the industry could support itself while ensuring growers receive prices that are sufficient to recover their cost plus a margin and the Cocoa Board would not have to resort to obtaining a loan which has to be paid back with interest.

The Cocoa Board, in conjunction with relevant government bodies such as the Department of Agriculture and Livestock, Bank of Papua New Guinea and the Department of Finance and Planning, should regularly monitor the fund balance. This would lead to timely modifications of the stabilization formula to

ensure that growers do not pay excessively into the fund when what may be considered as a maximum fund size is reached. In this situation, the rate at which levies are collected would be revised downwards.

The issues discussed in this chapter may not be critically important for at least the next couple of years. However, when world prices for cocoa pick up, and the loan is repaid, these recommendations will provide a basis for considering changes in cocoa stabilization policy. The immediate concern is how and when to repay the loan should the government require it.

CHAPTER 12

Restructuring the Tonga Commodities Board

Lisiate 'A. 'Akolo

In June 1989, the author agreed to a request from the Tonga Commodities Board (TCB) to be seconded as its Managing Director. The secondment was for a period of up to twelve months and its objective was to restructure the TCB. The two main areas of focus were to be the amendment of the TCB's legislation and a review of the organizational structure. The main purposes of the restructuring were to improve the commercial outlook and profitability of the Commodities Board, and to abate the serious liquidity problems it was facing at that time. This chapter provides an outline of the background of the operations of the TCB, and discusses the need for restructuring and how this restructuring can best be achieved.¹

Terms of Reference

The most important parts of the Terms of Reference of the Managing Director were:

- Review the operations of the Commodities Board with the specific objectives of: amending corporate legislation, regulations and policies that will contribute to good management and better financial and commercial profitability; and restructuring the divisional and organizational set-up to relieve the extreme liquidity problem it now experiences.
- In pursuance of the above objectives, negotiate and seek funds for the Commodities Board from external and local sources.

1 Some of the thoughts on restructuring have changed direction in the months since the proposal report was presented. However, they were believed to be the most appropriate given the critical situation of the Commodities Board at the time.

- Negotiate settlement of the TCB's overdraft facility with the Bank of Tonga through seeking a government guarantee and other similar measures.
- Review the joint venture proposal that has been negotiated between the Commodities Board and potential overseas partners.
- Realize all excessive assets to provide additional working capital.
- Negotiate for technical assistance to fill the senior vacant posts that may be best filled by expatriate staff and review the management information system.
- Review the optimum staff requirement with the goal of removing over-staffing.
- Oversee the development and implementation of the authorized activities of the TCB and ensure that policies and procedures are being followed in all areas of operation.
- Exercise full discretion and authority over divisional management staff to ensure the achievement of the reorganizational and restructuring objectives and overall efficiency of management.
- Conduct any other duties that may be directed by the TCB from time to time.

History and organization

The TCB was incorporated under the Commodities Board Act 1973. It was formed as a merger between the former Tonga Produce Board and the Tonga Copra Board, which had a subsidiary, the Tonga Construction Company (TCC). The TCB began operating in January 1974.

The major objective of the TCB was to provide all the necessary marketing services for the agricultural produce of the Kingdom, attempting to raise the best returns for the growers. Over the years, the TCB has been profitable. Profit was T\$1.5 million in 1977 and T\$0.97 million in 1984. However, in 1988, the TCB experienced a large loss of approximately T\$1.8 million which caused extreme liquidity problems in the ensuing years.

The TCB's controlling body is the Board of Directors. The Board of Directors makes decisions on major personnel and marketing policy issues, including prices to be paid to the growers, investment strategies, prices of major construction contracts and appointment of senior officers.

Before the enactment of the Commodities Board Amendment Act 1989, there were nineteen directors: nine *ex officio* members, seven elected members of the growers, two elected members of the nobles and the Managing Director. The day-to-day management of the TCB was in the hands of the Managing Director, supported by the Secretary to the Board and the Finance Manager.

Before approval of the restructuring proposal in September 1989, there were two main divisions, the Primary Produce Division (PPD) and the Construction Division (CD). These divisions were run by divisional general managers. The general manager of the PPD was also responsible for the copra crushing mill, the

soap factory, the snack-food unit, the chemical store and marketing cash crops such as vanilla, bananas and coconuts. The general manager of the CD was responsible for the management of field construction, the construction store, the quarry, block making, gravels, ready-mix cement, the joinery, the blacksmith operations, plumbing and the garage.

A smaller subsidiary division, the Desiccated Coconut Factory (DCF), processes desiccated coconut and livestock feed, and exports whole coconuts. The DCF was run by a factory manager who was directly responsible to the Managing Director.

There are branches or representative offices of the TCB in all outer islands of the Kingdom and all are involved in copra trading and the operation of construction stores.

Problems before the restructuring proposal

This section covers the main causes of the Commodities Board's financial and liquidity problems. The proposed solutions to these problems are discussed in the following section. In order to discuss the main problem areas, it is necessary to describe the main operational divisions and other important factors that existed before the approval of the restructuring proposal. The main operational divisions reviewed here are the Board of Directors, Head Office, the Primary Produce Division, the Desiccated Coconut Factory, and the Construction Division. Other important factors covered are the divisional organization chart, the liquidity situation, and staffing policy.

Board of Directors

Before the enactment of the Commodities Board Amendment Act 1989, the nine *ex officio* directors included the Prime Minister, Minister of Finance, Minister of Agriculture, Minister of Labour, Commerce and Industries, Secretary to Government, Director of Agriculture and the Governors of Ha'apai and Vava'u. The nine elected members comprised two representatives of the nobles, two representatives of the producers from Tongatapu and one each from Ha'apai, Vava'u, 'Eua, Niua Toputapu and Niuafo'ou.

Six critical factors in the structure and composition of the Board of Directors prevented it from being commercially competitive:

- The size was simply too large to be an effective decision-making mechanism in the present competitive business environment. Because the directors sat only once a month, and delegated little authority to management, they could not make vital day-to-day business decisions that other smaller organizations would normally make on the spot.
- It was extremely expensive. During the past ten years, around T\$900,000 has been spent on the Board of Directors alone. Between 1984 and 1988, the average annual expenses were about T\$140,000. At around 7 per cent of throughput, this was too costly.

- The Board of Directors, consisting of senior people from Government and elected members, became too political. This created conflict between good business principles and the political and personal interests of members.
- Some of the elected members did not have appropriate skills and expertise in marketing and construction (the main businesses of the TCB). Their election was based on their social status which did not necessarily include experience in marketing and construction works.
- The directors lacked knowledge of the internal management and financial operations of the TCB. Many management decisions which adversely affected the welfare of the TCB were not known to the Board of Directors.
- Members of the Board of Directors tended to be autocratic, especially in not wanting to delegate authority and power to management.

Head Office

The Head Office contributed to management problems faced by the TCB in two ways: financial and operational.

Head Office controlled the main bank account of the TCB and was responsible for arranging and settling the overdraft facility with the Bank of Tonga. Because the offices of the Managing Director and Finance Manager were in the Head Office and they were responsible for arranging the overdraft facility, the accounting system was centralized. This was presumably for better control over expenses and the overdraft facility. The centralization of the accounting system at Head Office became one of the major contributors to the TCB's extreme liquidity problem.

First, the Head Office did not have the staff to handle the centralization program it instituted. There was only one qualified accountant, the Finance Manager, who could not cope single-handedly with the TCB's diverse accounting operations. Delegation of authority was neither encouraged nor practised, to the point where the confidence and morale of the senior accounting staff started to buckle. All payments were made through one main account—the overdraft account with the Bank of Tonga. Lack of cash flow planning resulted in chaos, especially when it came to the settlement of large letters of credit, sight drafts and other short-term credit commitments.

Second, especially during the three years before the restructuring proposal, the Head Office usurped the authority of the divisional general managers, particularly in the ordering of goods and materials. The removal of delegated authority from the divisional managers was a serious demoralizing factor. This act broke the cardinal management principle of allocating authority in line with responsibility. Consequently, the managers felt they had no responsibility or accountability for paying the bills and debts they initiated. The demoralization effect started to trickle down to the subordinate staff. Personal differences between Head Office personnel and the divisional managers started to mount, and productivity declined.

Primary Produce Division

At present, the PPD is responsible for marketing agricultural products (principally the export of copra oil, bananas and vanilla), and for the agricultural chemical store, snack-food processing and soap manufacture. According to the provisional financial statements for the first half of 1990, it made a loss of approximately T\$0.36 million. The loss was mainly due to: high subsidies on the prices of copra and bananas; the high cost of certain items, such as cartons for bananas; high administration costs, including labour/staff wages; high depreciation relative to net sales, indicating a low asset utilization ratio; and unproductive and redundant staff.

The TCB established a Copra Stabilization Fund under the Commodities Board (Copra Stabilization Fund) Regulations 1977. Section 8 of the Regulations stipulates that the fund 'shall be used only for the purposes of stabilizing the prices payable to producers of copra'. However, the stabilization fund was transferred to the TCB's main account in October 1985 because of the need to reduce the overdraft with the Bank of Tonga (which was then reaching about T\$2.2 million). This was an ill-affected move as the TCB continued to pay to copra growers amounts that were in excess of what it should have paid, on the misapprehension that the excess was paid from the Copra Stabilization Fund. The fund by that time was only a 'book entry' and there was no longer any cash in it. This contributed to a worsening position of the overdraft account, making it more costly in terms of the high interest rate it had to pay. Since the termination of the Copra Stabilization Fund in October 1985, approximately T\$2 million has been paid out as a 'subsidy' (i.e., an amount over and above what should have been paid out to the growers).

The TCB incurred similar losses in paying subsidies on the price of bananas. In early 1989, for instance, the f.o.b. price for a case of bananas was T\$8.90. After deduction of administration and overhead expenses, the net return to the TCB was T\$5.57. However, the price paid to growers was T\$6.80 per case, or a subsidy of T\$1.23 per case. The greater the volume of banana exports, the greater the loss to the TCB.

Desiccated Coconut Factory

The DCF was plagued by labour, mechanical and technical problems from its commission in 1986. Productivity was low due to labour problems: difficulty in obtaining the required number of shift workers, low levels of skills among workers, piecemeal rates which were not competitive with other industries, and low morale of workers. Also, workers (mostly females) would not work shift periods, especially the midnight shifts.

The factory also experienced mechanical and electrical problems; causing regular temporary shutdowns. In addition, plant design was poor. First, the dryer suffered from a sensitive temperature recorder among other things, and the power control produced poor quality 'oily coconut'. Second, the Morgensen size separation equipment was unnecessarily complex, requiring a high level of

technical know-how. Third, the 2-megawatt boiler was grossly oversized, with factory needs at only 30 per cent of potential output. Continuous shut-downs damaged the combustion box refractory lining and in January 1989 the boiler burned down.

It is unfortunate that the factory has been beset by erroneous design and technical problems. However, plant size (production capacity) and the large labour force required to achieve full production, would make the factory uneconomical even if it were to be repaired.

Construction Division

The CD had suffered management problems for quite some time, caused by its diverse nature. Even though the main business line of the division was field construction, the business nature of the subsidiary units was different. The qualifications of the past general managers for running the entire division were suspect as they were selected because of their structural engineering and construction background. Their assistants, the construction managers, had always been structural engineers or architects.

The general managers did not possess the competence to run a division which also included a construction store, quarry and other workshops. The workshops were potentially large income generators, but were often managed by supervisors and foremen who did not have a sound business background. Due to lack of incentive schemes and the bureaucratic characteristics of the TCB, lower-level management was unmotivated to improve the quality of products or standard of services

Even though the construction store, workshops and quarry were making money, their profits were often transferred to other units (especially to field construction) to show that the division's main business line was sound and healthy. The subsidiary units were, in effect, subsidizing the field construction unit. There was also an indication of incorrect valuation of end-of-period stock and work-in-progress of the store, field construction and workshops. Consequently, the cost of sales was low, inflating the gross profit.

The CD was too large to be effectively managed by a general manager who was given no business assistant. A construction manager was traditionally regarded as the assistant to the general manager; however, his time was fully dedicated to field construction. Only on occasion was he directly involved with the management of the other subsidiary units.

Personnel management was deficient throughout the division. There was a lack of training, especially trade and technical training, to upgrade the skills and expertise of the employees. The division was part of a bureaucratic organization with 'across-the-board' personnel policies, including wages and other incentive benefits. This meant that, although construction was a highly competitive business, the CD was run like a public service department. As a result, employees were not highly productive and were unable to help the division into a situation where it could compete effectively. The division also did not employ

proper professional staff. Despite the fact that field construction was its main business line, the division did not have qualified quantity surveyors, architects or structural engineers.

The CD was further handicapped by lack of application of proper business principles in conducting business transactions between the workshops, store and field construction. Normally, the charging of goods and services was done on a cost basis, without the application of proper profit margins.

Organizational structure

The organizational structure of the Commodities Board also posed some difficulties. First, Head Office contained the top executive post (Director of Commodities) which was distant from the rest of the senior managerial posts and without any designated deputy or assistant. There was a large subsidiary divisional set-up, where divisions operated as autonomous entities, but the role of Head Office, *vis-à-vis* the subsidiaries, was not clearly defined.

The posts of Director, Finance Manager and Secretary to the Commodities Board were based at Head Office. Most of the large expenses of the Board were written to Head Office, including the Board of Directors' expenses, insurance, bank interest, depreciation and legal expenses.

Head Office assumed the entire overdraft portfolio of the TCB yet had no real sources of income apart from interest on overseas investments, rentals from a business building and other smaller revenue sources. This meant that Head Office had always been an impecunious unit incurring high deficits. Unfortunately, incomes of the other divisions were not large enough to cover Head Office operating expenses.

The overdraft facility was controlled by Head Office as were, in recent years, the payment of bills and credit accounts. However, most of the ordering (of goods and stocks) was done independently in the divisions, causing problems in making timely payments. Unpaid bills and debts accumulated, worsening the overdraft situation.

The divisions also had their own structural problems, as indicated in previous sections. Since inception, there had been at least three changes in the divisional structure and management, and incorporation of the TCB.

Liquidity situation

The TCB had been beset by severe liquidity problems for many years. These liquidity problems did not improve despite continuous technical assistance and financial injections (through Stabex transfers, foreign aid and borrowings) by the government. In addition to its long-term debts, it faced extreme difficulty in meeting short-term debts and obligations.

At the end of June 1989, the current assets of the TCB were approximately T\$3.4 million. Current liabilities were T\$3.9 million, giving a current ratio of 0.87 which spelt trouble. The Board could not meet the claims of the short-term creditors with assets expected to be converted to cash in the near future. This

ratio was in fact even worse given inaccuracies in the valuation of stocks, especially aging stocks, which were over-valued.

The quick (acid test) ratio was 0.3, which was very weak indeed. This ratio indicates the real liquidity situation of the TCB when inventories are deducted from the current assets. It shows that the Board did not have the ability to pay its short-term obligations without relying on the sale of inventories. The debt ratio (total debts/total assets), which measures the percentage of total funds provided by the creditors, was about 0.6, indicating that creditors had supplied approximately 60 per cent of the TCB's financing. The above ratios point to the fact that the Board's liquidity position was extremely critical. It could not meet its short-term obligations and would do so in the future only with a major external financial injection.

Staffing policy

The TCB had some of the most generous staff benefit policies in Tonga. Some of these required immediate review to prevent a deeper liquidity crisis. First the Board of Directors' remuneration was among the highest of all the statutory boards in Tonga. Second, a meritorious long service award scheme allowed any staff member who had served for at least fifteen years to draw retirement award benefits while still working for the TCB. Third, the Commodities Board was the only statutory body that provided a retirement award for intermittent labourers and a redundancy award for its daily paid (casual) labourers. Given the large number of permanent and daily paid employees, these personnel policies were very costly. Between 1984 and 1988, T\$671,838 was paid to staff under the meritorious long service award scheme. These exorbitant expenses contributed to the serious liquidity problems.

Proposed solutions

Attempts were made in August 1989 to provide a remedy to each of the problems mentioned in the previous section. Most of the suggestions needed further investigation and in-depth feasibility studies, which were to be done after the Commodities Board agreed to the restructuring proposal. The proposed set of solutions outlined in this section is not exhaustive, but is focused on those which would affect the general operations of the Commodities Board and the export marketing of agricultural commodities.²

Board of Directors and Commodities Board Act

Resolving the legislative issues was certainly the most sensitive and delicate part of the assignment. The Board of Directors consisted of cabinet ministers, senior government officials, nobles and other influential citizens of the Kingdom. Yet

2 See 'Akolo (1991) for a comprehensive coverage of the proposed restructuring program.

amendment of the Commodities Board Act was essential to make it into a much smaller unit and to terminate membership by election. The reasons for these proposed amendments were:

- to improve the efficiency of decision making of the Commodities Board, giving it a better chance of survival in the present highly competitive business environment;
- to make the TCB less costly, thus improving its profitability; and
- to remove as much as possible politics (and the dominance of political issues and considerations) from the TCB's operations.

The amendment had five main aims. The first was to make the Commodities Board more commercially oriented and viable. The second was to enable the establishment of a better working relationship between the Board of Directors, management and other staff. Third, the amendments were expected to facilitate consideration of aid and contributions from outside sources. Local banks, government, external lending institutions and operators of bilateral aid programs had indicated that the structure of the TCB had to be changed before assistance could be given. Fourth, the amendments would allow His Majesty in Council (or other shareholders) to appoint the most qualified and learned candidates to the Board of Directors. Finally, the Board of Directors would have a better understanding of the internal organization and decision-making process of the Board because it would be a much smaller unit. This would facilitate the implementation of policies and the achievement of the corporate objectives included in the 'rescue package'.

Recommendations were made that the TCB should agree to the draft amendments of its legislation. In principle, these amendments included: (i) reduction of the members of the Board of Directors from nineteen to seven; (ii) abolition of the election system for the representatives of the nobles and growers; (iii) appointment of the members of the Board by His Majesty in Council; and (iv) provision for equity contribution from both the government and private shareholders.

A bill containing the amendments to be enacted by the Legislative Assembly was submitted through the Prime Minister's Office and His Majesty in Council. It called for the dissolution of the existing Board of Directors until the appointment of a new Board of Directors by His Majesty in Council. In the interim, management would be responsible to a management committee, consisting of the Prime Minister (Chairman of the Board of Directors), the Acting Deputy Prime Minister and Minister of Labour, Commerce and Industries, and one representative of the growers.

The Commodities Board Act 1973 was amended in October 1989. There were two principal material amendments to the Act. First, a provision was introduced specifying the authorized capital of the TCB. The government has since paid for a small number of shares to allow it to become the initial sole shareholder. The specification of the authorized capital was to allow the Commodities Board to

start calling for shares, requiring the shareholders to pay part or all of the proposed authorized capital of T\$5 million.

Second, the size of the Board of Directors was reduced to seven. Six directors would now be appointed by the shareholders, and the Managing Director would be appointed by the Board of Directors. The amendment also called for alternate directors, to ensure that a full board is present at all meetings.

Head Office and the decentralization program

Head Office was still to comprise the Managing Director, Secretary to the Board, Finance Manager and other supportive staff. However, two main changes were required—the introduction of a new post of Deputy Director and decentralization of the accounting system.

Because of the proposed decentralization of the main divisions of the TCB and the great emphasis being placed on the strengthening of the store and field construction operation, full commercialization of the smaller workshop units was needed. As well, there was a need for the Managing Director to concentrate on planning and formulation of business and development policies. The new post of Deputy Director, which would be responsible for the day-to-day operations of the TCB, was created to meet these needs. This post would include direct control of all business operations, accounting and electronic data processing/computer sections.

The accounting system and staff would be decentralized in order to:

- introduce better financial control and management in each division/unit;
- distribute both assets and liabilities (including the overdraft facility) appropriately and equitably among the various divisions/units;
- inculcate a spirit of competition among the managers and heads of divisions/units, who would know they were accountable for their expenses and profits;
- rebuild the spirit of the demoralized managers and staff by delegating appropriate authority which had been usurped by Head Office;
- ensure profits of each division/unit were ploughed back for its own benefit and improvements, with the proceeds and revenues from sales and services of each division/unit reserved for timely settlement of its letters of credit, sight drafts and other credit commitments; and
- provide better assessment of the problems and performance of divisions/units not making profits, so that they could be advanced by introducing new financial injections or joint ventures or, if these attempts prove fruitless, liquidated.

In order to avoid the burgeoning deficits incurred by Head Office in the past (thus moving away from the traditional system of receiving compensation from the income-earning divisions/units), it was proposed under the new decentralization scheme that the workshops be placed under the control of Head Office.

To upgrade the business calibre of the TCB, a Business Advisory Officer was to be procured under bilateral aid programs. This adviser would be responsible for identifying, formulating and implementing the business investments of the Commodities Board and training the heads of income-earning workshops on proper management practices and procedures.

Each workshop would be reorganized with the aim of providing it with improved management systems. Because the workshops would now be autonomous profit centres, incentive bonus schemes were to be introduced. In all cases, the units would be allowed to enjoy a certain percentage of their net profit. These incentive bonus schemes would be granted on top of employees' normal wages and other benefits, with the aim of avoiding existing high turnover rates and low productivity.

To upgrade the technical and professional skills of the business workshops, the TCB would establish a training program for both its existing technical staff and apprentices. Existing technical staff would be sent to 'top-up' technical courses, and the possibility would be explored of extending the technical apprenticeship program being sponsored by bilateral aid programs under the Ministry of Works.

As a measure to overcome the TCB's financial difficulties, Head Office would consider creating a special unit to be known as the Investment and Joint Venture Unit. This unit would concentrate on conducting feasibility studies for the various investments and joint ventures being proposed to the Commodities Board.

TCB management would continue to explore the possibility of forming joint ventures (if outright sale was not possible) with a foreign company for the ownership and management of some of its operations, including the Desiccated Coconut Factory. Other joint ventures, especially in agro-based and construction-related industries, would be explored and considered. This would provide economic benefits to the country, especially increased employment, export/foreign exchange earnings and import substitution.

A Public Relations Office was also proposed, to overcome the poor image and business reputation of the TCB. However, it was acknowledged that the work of this office would depend on the improvement of the TCB's products and services.

The liquidity situation and financial injection

The liquidity problem of the TCB was so serious at the time the proposals were made that receivership or liquidation was imminent unless immediate emergency action was taken. As a strategy for returning the Commodities Board to a much stronger financial base, the management proposed to the main creditors various means of eliminating the overdraft facility and liabilities to other creditors, and of injecting new funds.

The following four options were considered for reducing or eliminating the TCB's overdraft with the Bank of Tonga:

- Redeem the Commodities Board's overseas term deposit of approximately T\$600,000 and pay it into the overdraft account, reducing the overdraft to about T\$1 million. Request the Bank of Tonga to convert the overdraft into a term loan repayable over a period of 10 years at 10 per cent interest rate.
- Redeem the T\$600,000 from overseas and deposit it in the various division/unit accounts, thus avoiding the need for fresh overdraft facilities. Request the Bank of Tonga to convert T\$1 million of the existing overdraft into a term loan with repayment terms and conditions as proposed in the first option.
- Request the government either to float domestic bonds on behalf of the TCB for full payment of the overdraft facility, or to guarantee the TCB in floating its own domestic bonds.
- Invite shareholders to take equity shares in the TCB with all or a majority of the shares initially reserved for the government. This would allow His Majesty in Council to appoint the initial directors and the Commodities Board to receive funding and technical assistance commitment from bilateral aid programs through the government.

It was not considered advantageous for the TCB to consider the fourth option at that time. First, it would have been difficult to attract shareholders to take equity in the Commodities Board because of the loss situation and extreme liquidity problems. Potential investors would not have seen it as a rational investment proposition. Second, even if there had been investors willing to invest, they would have bargained for a low share value and/or a majority shareholding to control the management of the TCB. Third, the *modus operandi* of inviting equity participation would have been time-consuming, involving lengthy negotiations and the preparation of feasibility studies, a prospectus and so on. Also it would have involved complications in the attempts and arrangements to settle bank loans and other credit commitments.

TCB management, supported by the Bank of Tonga, believed that the third option was best, and should be executed immediately. The Commodities Board would request the government to follow one of two courses. First, it could float domestic bonds to the value of T\$2 million and surrender the proceeds to the TCB for complete settlement of the overdraft facility of T\$1.5 million. The balance of T\$0.5 million would be used for starting a working capital account or used to settle some of the most urgent credit commitments.

Second, the government could guarantee the TCB which would float all the domestic bonds. The major advantages of this option were that the money from the bonds would be available immediately once the government agreed to the conditions, and the premium interest rate of 8 per cent was lower than the then overdraft rate of 10 per cent (since increased to 13 per cent in the last quarter of 1989).

Once the current overdraft facility was settled, the TCB would then be in a position to negotiate with the Bank of Tonga, the Tongan Development Bank and the government on various financial matters. These negotiations would cover fresh overdraft facilities, long-term capital loans and bilateral aid assistance

according to the requirement of each division and unit, and the rehabilitation and expansion programs proposed by the Commodities Board management.

The government agreed on 31 May 1991 to guarantee an overdraft for the TCB to a ceiling of TT\$1.2 million. This agreement is to be terminated on 31 December 1992, or earlier, if the overdraft is repaid.

Staff situation and staffing policy

At the end of May 1989, there were five key posts to be filled: Managing Director, General Manager (Primary Produce Division), General Manager (Construction Division), Finance Manager and Construction Manager. The post of Director was filled in June 1989.

There was an urgent need to fill other senior posts and to imbue staff with a better spirit and morale by having permanent divisional heads to lead them. This would also be conducive to proper coordination and implementation of the restructuring plans being proposed for the divisions.

It was recommended that the TCB review its major staff policies to ensure that they were compatible with the restructuring proposal. In particular, it should weed out all policies that eroded its commercial profitability, and it should not necessarily relate its policies to similar policies of the government and other statutory boards. On the other hand, the Commodities Board should incorporate in its policies appropriate rewards for employees, based on their productivity and contribution to profit, because it could not compete effectively with the private sector without such an approach.

In particular, the TCB should review (or terminate where appropriate) the benefits granted to the directors and employees under the Board of Directors Service Award Scheme, Meritorious Long Service Award Scheme, Daily Paid Employees Benefit Award Scheme, and Annual Leave and Leave Passage Award Scheme. The review should concentrate on the appropriateness and cost of these award schemes, bearing in mind the need to encourage and motivate the employees.

Primary Produce Division and Desiccated Coconut Factory

The PPD needed reorganization, especially in the marketing of commodities still under its export licence control—copra and associated coconut products, vanilla and bananas.

The ruling price of crude copra has not been attractive to growers in recent years. Also, only a limited market in New Zealand and Australia exists for other coconut products, notably whole coconuts. Management had explored the possibility of exporting both whole and sprouted coconuts to the west coast of United States and Japan. However, there had been shipping problems, especially for sprouted coconuts which needed open-sided containers and shipment at regular intervals.

The future of the banana industry has been a moot point in the sense that a protocol agreement covering quarantine and other entry regulations was

required to be signed between the Tongan and New Zealand governments. As an alternative, the TCB had been exploring opportunities in the Japanese market. However, there were potential problems regarding the volume, quality and regularity of supply required by the Japanese market.

There was extreme doubt about the future of the desiccated coconut industry in Tonga. First, the DCF suffered from technical and labour problems (see above) which would probably recur in the future. Second, Australian authorities would not contribute further aid money to rectify existing major technical faults and upgrade operations in the factory.

Given these problems, the TCB was required to consider three options: formation of a joint venture; outright sale of the factory; or closing down the factory and using the building for other purposes. Given the expected future economic benefits in terms of employment, foreign-exchange earnings and proceeds receivable from Stabex transfers due to export of desiccated coconut, and the potential improvement in world market price due to political upheavals in some of the major coconut-producing countries, the first two options were considered more advantageous.

It was also recommended that the PPD explore possible joint ventures for its other products, e.g. livestock feed, soap and snack foods. Tonga's closest neighbour, Fiji, has successfully manufactured these items on a commercial basis. The TCB already owned most of the necessary plant and machinery for production, donated through aid programs, but expertise was needed. The viability of these small processing ventures would not only contribute to the profitability of the PPD but would also provide economic benefits to the Kingdom.

Another recommendation was that the PPD strengthen its agricultural chemical store operations which had been badly run down due to lack of working capital. Being one of two agricultural chemical stores in Tonga, there is a good market for its products throughout the Kingdom. It was proposed to examine the possible expansion of store operations in Vava'u and the outer islands.

Review of proposed solutions

The success of the solutions anticipated under the restructuring proposal has been mixed. The amendment of the Commodities Board's legislation to allow a change in the composition of the Board of Directors has been a major step towards eliminating the strong political element that was present. The provision for authorized capital of T\$5 million is not only an avenue for receiving new financial injections, but also an infusion of a broader commercial outlook.

The government has now agreed to become the initial shareholder of the TCB. However, it has paid only a token amount towards its shares, to allow it to satisfy the requirements of the Amendment Act—especially the preparation and

registration of the Articles of Association which provide for the appointment of the Board of Directors. At the time of writing this chapter, the Cabinet had approved the new directors comprising four government ministers, two members from the private sector and the Managing Director.

The biggest constraint faced by the restructuring proposal has been the inability of the TCB to raise new funds as anticipated in its restructuring plan. The negotiations with the government on floating the bond issue have taken too long. Even though the government had agreed to guarantee the flotation of a bond issue of T\$3 million, it continued to defer it, due initially to the need to draw up proper conditions of a guarantee agreement and, later, the appointment of the new directors. At the same time, the government did not provide its expected equity contribution of at least T\$1 million for 1990. The lack of financial injection to the TCB meant that most of the plans incorporated in the restructuring proposal could not be carried out.

Even though the various divisions/units have been decentralized, with each manager controlling different accounts, the fact that the Commodities Board is still one legal body has made it difficult to separate the management of the divisions' financial affairs. It is difficult to avoid the subsidizing of some divisions/units by other divisions. Lack of funds also made it difficult to implement a major redundancy program because there was not enough money to pay off redundant employees. At the same time, the world market price for copra decreased from about US\$540/tonne f.o.b. Nuku'alofa in May 1989 to US\$255/tonne f.o.b. Nuku'alofa in October 1990. This drastic drop in price meant an increased loss to the PPD because of the subsidy paid to copra growers which was maintained between T\$200/tonne and T\$300/tonne. The TCB found it difficult to reduce the price below T\$200/tonne as this would not provide enough incentive for the growers to produce copra. If the TCB were to terminate the subsidy, the copra industry would collapse. Despite numerous requests to the government to provide the required subsidy assistance, it has not done so.

The lack of financial injection has prevented the Board from implementation of most of the restructuring proposal. The TCB has not been able to recruit business and technical expertise for its workshops. The loss on its copra operations meant that it has not been able to provide new funding for the PPD's subsidiary units including livestock feed, snack food and soap. The DCF has not been upgraded for lack of a proper study on the feasibility and technological appropriateness of the factory. Labour supply has also been of concern. Even though advertisements were made overseas for joint ventures (mainly in Australia), very little positive response was received.

In the course of this failure to restructure fully, the Commodities Board must review the restructuring proposal and corporate plan. Management has therefore proposed the following to the government and the interim management committee:

- The government would provide an amount of T\$0.5 million to T\$1 million to the TCB to subsidize the copra price and reduce the administrative cost of running its PPD. This subsidy would continue over at least the next three years. Meanwhile, a bond issue of T\$3 million is to be floated to provide new funding for non-agricultural operations. It is obvious that without direct assistance for the copra industry from the government, the profits of the non-agricultural operations would be absorbed by the expected loss of the copra operation, creating difficulty in paying of the premium and other commitments on the bond issue.
- A major privatization and rationalization program must be instituted immediately to allow divisions to survive on their own, without supporting or being supported by other divisions. It was obvious during the past year that even though management and financial controls were decentralized, financial independence for each division was difficult to achieve. Inter-divisional subsidies will still exist, and cost some divisions dearly, as long as the divisions remain under the auspices of the same legal body.

Following from the above, the Commodities Board requested the Asian Development Bank to provide two technical assistance consultancy services to implement the rationalization programs for the coconut industry and the non-agricultural operations of the TCB. It is expected that these consultancy services will begin in early 1991. The objective of the proposed rationalization program for the coconut industry is to review and rationalize the coconut sector. This program would be carried out in two phases. The first phase would entail a review of the viability of the industry, the need for production, processing and marketing reform, and the constraints on and potential for coconut development. It would also cover major development issues—the status of implementation of reforms, and identification of development options for coconut smallholders and factory owners, including policy changes to stimulate production and processing. The strategy and policy framework of the TCB would also be reassessed, especially where it would affect the proposed investment projects in the second phase of the program.

Subject to the findings of the first phase, it is envisaged that the main components of the ensuing investment project would include: replanting old coconut palms, and establishing and maintaining coconut and intercropping nurseries and coconut seed gardens; the provision of vehicles for transporting planting material, harvested product and fertilizer; the establishment and rehabilitation of machinery, buildings and housing; and the provision of facilities, equipment, training and consultancy services. Involvement of the private sector would be explored for the above activities.

The proposed subsidiary companies for the non-agricultural activities of the TCB would be: the Construction Materials Supply Store, the Field Construction unit, the Quarry, and Oil Mills of Tonga. Already a subsidiary company, Oil Mills of Tonga would negotiate with the Commodities Board for direct purchase of copra from growers. It would be responsible for marketing coconut oil and

would consider alternative techniques of coconut oil processing. The company would explore diversification of its activities into new value-added products including refined cooking oil, margarine, soap and detergent. Diversification and redevelopment of processing would include new methods of staging and handling copra in bulk; centralization of copra drying in the outer islands; development and diversification of the use of the oil milling plant, including processing supplementary products like soybean and other vegetable oils; and coconut oil alkaline-refining, bleaching and deodorizing.

Other subsidiary units of the TCB would undertake important activities in the agricultural marketing system:

- A Marketing, Investment and Research Unit would be responsible for market information, calculations and negotiations of prices, conducting feasibility studies, and research into new investment areas and products such as coconut juice, cream and vanillin.
- A Sundry Produce Unit would be responsible for the processing and export of vanilla, bananas, watermelons, squash and crops other than copra and associated coconut products. This unit would collaborate with the Marketing, Investment and Research unit in conducting feasibility studies of new value-adding processes.
- A Livestock Feed Unit would seek a joint venture with outside interests in producing piggery and (possibly) other types of livestock feed.
- The Soap Factory would conduct further studies on how to improve the quality and marketing (especially packaging) of soap with the aim of selling to hotel chains in New Zealand, Australia and possibly the United States.
- The Agricultural Chemical Store would be responsible for negotiating aid-assisted projects and the distribution of fertilizers and other agricultural production inputs to all islands in the Kingdom.

Eventually, the Desiccated Coconut Factory would have to become a separate company. The proposal is to establish a joint-venture company that would fully own and manage the factory.

The TCB would restrict its business activities to what its Primary Produce Division now undertakes, i.e. the marketing of copra and associated coconut products, bananas and vanilla.³ All the responsibilities of the PPD would be assumed by the TCB, which would be the holding company. The TCB would continue to concentrate on processing and marketing agricultural products.

Each subsidiary company would have its own board of directors and a management team that would be responsible for day-to-day operations. It is expected that the subsidiaries would sell shares to the private sector, once strengthened, after the privatization program. Each of these subsidiaries needs stable management, a sound financial structure and adequate working capital.

The main connection between the TCB and its subsidiary companies would be at the level of the Board of Directors and through the provision of periodic financial information to the holding company (the TCB) for consolidation of the

3 It also began marketing pumpkins to Japan in 1991.

group's financial statements at the end of the financial year. Through this arrangement, the subsidiary companies would be given an opportunity to operate more efficiently without being encumbered by Commodities Board losses.

With the appointment of the new Board of Directors, it has been agreed in principle that the privatization and rationalization program for the non-agricultural operations would proceed with the first stage of the privatization program for the coconut industry completed by 31 July 1991.

Postscript

It was announced by the Tonga Commodities Board that it would cease to function on 31 March 1992 (*Tonga Chronicle*, 23 January 1992:2). The dissolution will have a considerable effect on the growers :

... the Privy Council is empowered to appoint a date for the dissolution of the Board and the inauguration of a private holding company to take over the assets and liabilities of the Board.

The appointed date by Order of Council is March 31, 1991.

The new holding company, Tonga Investments Limited, was registered on December 20, 1991. This means that the new company and the Board will exist side by side until March 31, 1992 when the Board will officially cease.

The dissolution of the Board means the liberalization of its statutory powers including the control of export licences for coconut products (including copra), vanilla and bananas ...

Under the new liberalization programme, the Board will no longer be obliged to buy copra from growers. The Board will however continue to operate its Coconut Oil Mill Company with the intention of buying copra from public if it proves to be viable. It is obvious however that it can only do so at the proper much reduced market price.

... the government, in the 1990/1991 financial year, allocated \$400,000 plus a loan of \$200,000 for copra price subsidy. In the 1991/1992 financial year, the government allocated \$400,000 of which \$250,000 has so far been received by the Board for the same purpose. These allocations are expected to cease at the dissolution date of the Board.

The liberalization programme offers an opportunity to the private sector to get involved in the copra/coconut export business. For this reason, private persons who are interested in export of copra/coconut, vanilla and bananas should now start the necessary arrangements for both market and finance for exporting of these produce and products.

Meanwhile, the Commodities Board will continue to export vanilla, squash and other products through a new subsidiary company call Tonga Exports Co Ltd only that it has to compete with the private exporters.

... It should be noted that the issuing of export licences will be reverted to the Ministry of Labour, Commerce and Industries and that quarantine control will be made by the Ministry of Agriculture.

CHAPTER 13

Cocoa and copra marketing in Western Samoa

Folomalo Vaitoa Toelupe and
Hugh Coulter

The Western Samoa Copra Board was one of the first statutory boards to be established in the Pacific region. Legislation for its formation was promulgated in 1948 to regulate production, processing and trade in copra. Various amendments to the Act have been carried out over the years, the two most recent being in 1981 and 1988. The former amendment facilitated the introduction of a new formula for price stabilization, whereas the latter amendment provided for the privatization of the Cocoa Board's physical marketing functions and for more emphasis on the regulatory functions.

Prior to 1972, cocoa marketing was handled by a limited number of marketers who were licensed by the Department of Agriculture, Forests and Fisheries (DAFF) under the Cocoa Export Ordinance 1961. In 1972, the Cocoa Board Act was passed which facilitated the establishment of the Cocoa Board with monopoly status in the purchase and export of cocoa and control over prices. The Cocoa Board Act was amended in 1981 and 1988 resulting in the introduction of price stabilization and the establishment of a cocoa regulatory board, respectively.

The recent privatization initiatives of both boards were ignored by the Asian Development Bank (ADB) in its assessment of the ADB Program Loan. Instead, the Cocoa and Copra Boards were abolished on 1st October 1990, when enabling legislation was formally repealed. Both cocoa and copra marketing systems in Western Samoa have gone full circle from private marketers to statutory bodies to regulatory bodies and back to private marketers.

The operational and financial difficulties of the copra and cocoa boards, which led to the Asian Development Bank's demand that they be abolished, are examined in this chapter. It is argued that recent initiatives by both boards to privatize and to regulate and improve quality should not have been ignored by

the Asian Development Bank. Experience in other countries has shown that sudden and total privatization leads to a significant drop in quality.

The Copra Board

Coconut production in Western Samoa is dominated by smallholders whose effort to produce copra is prompted more by the need to satisfy short-term objectives than to create an ongoing business concern. This is reflected in Figure 13.1 which shows a perverse relationship between total annual copra production and prevailing producer prices.

Figure 13.1 Western Samoa copra production and prices, 1982-89

Source: Western Samoa Copra Board; Western Samoa, Statistics Department, *Annual Statistical Abstracts*, Apia, various issues.

The Copra Board had monopoly powers in the purchase and export of copra until its recent demise. However, it granted licences to traders to handle buying operations in the districts and to transport copra to the Copra Board depots.

Marketing performance

In recent years the Copra Board has faced a number of marketing problems:

- Shrinkage has been extremely high (16 per cent of sales in 1985), but this loss was reduced to approximately 3 per cent in 1987 and 1988 through tight stock control programs and discounts for high moisture copra.
- Quality problems have been a frequent occurrence, caused by mouldiness, smokiness, insect damage, inclusion of mature

nuts, mixing different grades of copra, extraneous matter (such as broken shells and stones) and poor storage.

- Material handling at the two main depots (Salelologa and Mataulu) is very inefficient as it involves double handling of copra.
- Unloading at the oil mill is very slow, limiting a number of loads per day a contractor can deliver.
- The oil mill has experienced operational difficulties in recent years which have required the Copra Board to export surplus copra. However, difficulties in booking space on ships (freight must be booked two to three months ahead) resulted in large stock-on-hand for considerable periods, tying up working capital unnecessarily and adding to costs.

Financial performance

On the financial side, the Copra Board was basically insolvent prior to its abolition, with excess liabilities over assets in 1988 of WS\$884,059. The financial performance from 1986 to 1988 is summarized in Table 13.1.

Table 13.1 Financial performance of the Western Samoa Copra Board, 1986–88

Key items	1986			1987			1988		
	Total WS\$m	Sales per tonne Per cent	WS\$	Total WS\$m	Sales per tonne Per cent	WS\$	Total WS\$m	Sales per tonne Per cent	WS\$
Copra fund reserve	-1.018	-17.8	-41.3	-1.799	-23.3	-101.3	-2.218	-23.1	-143.7
Other reserves	0.268	4.7	10.9	0.256	3.3	19.4	0.270	2.8	17.5
Bank balance	0.289	50.4	117.2	-0.293	-3.8	-16.5	0.235	2.4	15.2
Investments	1.500	26.2	60.9	1.500	19.4	84.5	1.500	15.6	97.2
Loans	0.826	14.4	33.5	4.300	55.7	242.1	5.350	55.7	346.6
Interest: loan	0.523	9.1	21.2	0.442	5.7	24.9	0.396	4.1	25.7
Interest: investments	0.406	7.1	16.5	0.195	2.5	11.0	0.950	2.0	12.6
Fixed assets	0.684	11.9	27.8	0.615	8.0	34.6	0.560	6.0	37.3
Stocks	0.392	6.8	15.9	0.519	6.7	29.2	0.339	3.5	22.0
Debtors	0.424	7.4	17.2	0.690	8.9	38.9	0.206	2.1	13.3
Creditors	0.093	1.6	3.8	0.086	1.1	4.9	0.106	1.1	6.9
Excess liabilities ^a	0.525	9.2	21.3	1.323	17.1	74.5	0.884	9.2	57.3
Operating expenses ^b	0.910	15.9	36.9	0.676	8.8	38.1	0.606	6.3	39.3
Selling expenses ^c	1.414	24.7	57.4	1.021	13.2	57.5	1.016	10.6	65.8
Export duty	0.223	3.9	9.1	0.300	3.9	16.9	0.427	4.4	27.6
Sales	5.733	100.0	232.6	7.724	100.0	434.9	9.597	100.0	621.8
Shrinkage	0.820	14.3	33.3	0.254	3.3	14.3	0.281	2.9	18.2
Purchases (\$m)	10.423	181.8	422.9	7.346	95.1	413.6	7.769	81.0	503.3
Purchases (tonnes)	24,648			17,761			15,135		
Sales (tonnes)	24,363			17,053			15,771		

^a Over assets.

^b Includes interest

^c Includes shrinkage but excludes export duty.

Source: Western Samoa Copra Board.

The demise of the Copra Board is directly related to the assistance the government has provided to stabilize producer prices and operational inefficiencies. The government assistance has been in the form of treasury advances totalling WS\$5.35 million over three years. The operational inefficiencies are clearly demonstrated in Table 13.2 which shows the total marketing cost structure for the period 1985–88. Another contributing factor to the poor financial performance has been the separate determination of the two critical prices: purchase price to growers and sale price to the mill.

The sale price of copra to the mill was based on a two-month lagged international price of the Federation of Oils, Seeds and Fats Associations (FOSFA) adjusted to f.o.b. value, which was calculated monthly. The grower price was determined infrequently, and was based on a complicated price stabilization formula. It was also subject to political influence.

Table 13.2 Western Samoa Copra Board costs per tonne of copra sold, 1985-88

	1985		1986		1987		1988	
	WS\$/ tonne	Per cent	WS\$/ tonne	Per cent	WS\$/ tonne	Per cent	WS\$/ tonne	Per cent
Purchase price	590.6	100	422.9	182	413.6	95	503.3	81
Operating expenses	23.1	4	36.9	16	38.1	9	39.3	6
Selling expenses	38.8	7	24.1	10	43.2	10	47.6	8
Shrinkage	93.8	16	33.3	14	14.3	3	18.2	3
Export tax	25.5	4	9.1	4	16.9	4	27.6	4
Total costs	771.8	131	526.3	226	526.1	121	636.0	102
Selling price	589.4	100	232.6	100	434.9	100	621.8	100
Deficit	-182.4	-31	-293.7	-126	-126.3	-21	-21.0	-2

Source: Western Samoa Copra Board.

Copra pricing and price stabilization

The price stabilization formula was based on a five-year moving average which included the four previous years' f.o.b. values and an estimate of f.o.b. price for the current year. This moving average was then adjusted to net f.o.b. value by deducting the Copra Board's administration and selling expenses (including shipping). From 1981 to 1987, this was assumed to be 25 per cent of the f.o.b. value but it was reduced to 15 per cent in 1987. In subsequent years, WS\$100 has been the assumed cost.

Floor and ceiling prices were then set at 95 per cent and 110 per cent, respectively, of the moving average. If the net f.o.b. price for the current year fell between the floor price and the ceiling price, a 20 per cent levy was applied to the difference between the net f.o.b. price and the floor price. If the estimated net f.o.b. price was above the ceiling price, the excess (i.e. above the ceiling) was subjected to a 50 per cent levy in addition to the 20 per cent levy on the difference between the floor and ceiling prices. If the actual price fell below the floor price, the shortfall was fully subsidized.

In practice, this price stabilization formula proved too complex and was not fully understood by those who operated it. It was seldom correctly applied and, even when correctly applied, the Copra Board on several occasions overruled the formula-determined price and set its own producer price.

It can be seen in Table 13.2 that using a prescribed percentage for administration and selling costs, which underestimated the actual costs, exacerbated the Copra Board's financial position. In 1986, for example, costs were estimated at 20 per cent, but according to the pricing formula, the actual costs were 44 per cent.

The pricing formula was originally intended to be carried out at frequent intervals to ensure that bounties or levies were closely related to movements in export prices. However, price reviews have been carried out infrequently, for example once in 1988 and once in 1989. One impact of these infrequent reviews

is that, in a falling market, the bounty element has been underestimated and substantially more has been paid in price support than has actually been approved in the price calculation. Another aspect of infrequent price reviews is that the devaluations which have taken place have not been passed on to the producer.

The Cocoa Board

Prior to its demise, the Cocoa Board had monopoly powers over the purchase and export of cocoa, similar to those of the Copra Board. However, in recent years some of the Cocoa Board's responsibility for purchasing and exporting was delegated to licensed traders and exporters, including plantation producers—although only one, Western Samoa Trust Estates Corporation (WSTEC), has actually exported cocoa.

Cocoa legislation was originally introduced when cocoa exports were approaching their peak (5,259 tonnes in 1962). Subsequently, exports have declined, as demonstrated in Figure 13.2. Because exports have declined substantially, it could be assumed that production has also declined. Yet this assumption is inconsistent with apparent production levels from village surveys and other sources. The explanation is that the cocoa crop is now mainly produced for domestic consumption and some private export of *koko Samoa* (mostly unrecorded). Only cocoa that is surplus to these requirements enters into the traditional export market. The World Bank (1990) estimated national consumption of *koko Samoa* at 2,000 tonnes, with a further 500 tonnes exported. Extrapolating from agricultural census data on weekly consumption by households of *koko Samoa*, indications are that the annual domestic consumption is around 2,200 tonnes.

Figure 13.2 Cocoa exports in Western Samoa, 1962–90

Source: Western Samoa Cocoa Board; Western Samoa, Statistics Department, *Annual Statistical Abstract*, Apia, various issues.

Marketing performance

As the Cocoa Board had, until recently, virtually the same management team as the Copra Board, it is not surprising that marketing problems affecting cocoa were similar to those affecting copra. First, shrinkage was very high (9.5 per cent

of sales in 1987), but the Cocoa Board reduced the loss to 5.5 per cent in 1988 through measures similar to those taken by the Copra Board. Second, export cocoa quality has declined steadily since the 1960s and has become a very serious problem for the industry. The quality decline has been caused by:

- poor fermenting, drying techniques and facilities (but adequate for *koko Samoa*);
- lack of technical knowledge by extension staff on fermentation and drying techniques;
- adulteration of export beans with unfermented beans of *koko Samoa*;
- smoke-tainted beans caused by broken flue pipes;
- a high percentage of internal mould caused by poor drying and storage;
- insect damage from poor and prolonged storage;
- buying of poor quality beans;
- reprocessing cocoa beans by washing and redrying, inducing further internal mould;
- inappropriate size grading practices;
- arbitrary standards of final inspection before shipment;
- lack of legislation defining quality standards;
- inability of the Cocoa Board to trace and follow up defective cocoa purchases (there are no identifying marks on the bags); and
- inadequate price differentials to encourage better quality.

The price received for export grade cocoa from Western Samoa reflects the quality problems. To illustrate the dramatic fall off in quality, Ivarami and Coulter compared this export price with the International Cocoa Organization (ICCO) daily price for cocoa (see Chapter 4).

These quality problems have been identified by the Australian International Development Assistance Bureau (AIDAB)-funded Cocoa Rehabilitation and Development Project (Hassall and Associates 1988), and the following steps have been implemented:

- establishment of pilot fermentaries and dryers;
- draft legislation to define quality standards;
- introduction of a cocoa quality management system, comprising a quality control system and a quality assurance system;
- introduction of quality price differentials;
- advice on proper reprocessing practices;
- installation of a grader/winnowing machine to grade to an internationally accepted size; and
- training programs on fermentation and drying techniques, assessment of quality, purchasing, registration and exporting procedures.

Financial performance

The financial performance of the Cocoa Board has been disappointing. Prior to its abolition in October 1990, it was basically bankrupt with substantial excess liabilities over assets. Key financial data based on 1986, 1987 and 1988 accounts are presented in Table 13.3. Many of the financial problems facing the Cocoa Board were a legacy of previous management (prior to 1986). The overdraft had been steadily increasing from WS\$1.42 million in 1981 to peak at WS\$2.19 million in 1987.

Table 13.3 Financial performance of the Western Samoa Cocoa Board, 1986-88

Key items	1986			1987			1988		
	Total WS\$m	Sales per tonne Per cent	WS\$	Total WS\$m	Sales per tonne Per cent	WS\$	Total WS\$m	Sales per tonne Per cent	WS\$
Cocoa fund reserve	0.464	18.1	730.7	0.517	25.9	909.7	0.473	63.9	1,679.6
Other reserves	0.206	8.0	323.9	0.202	10.1	354.8	0.202	27.3	716.6
Bank balance	-2.051	-79.8	-3,229.6	-2.191	-109.7	-3,856.0	-1.836	-248.5	-6,527.8
Loan - Copra Board	1.000	38.9	1,574.8	1.000	50.1	1,760.1	1.000	135.3	3,554.7
Loan - Treasury	0.500	19.5	787.4	0.500	25.0	880.0	1.075	145.4	3,821.3
Interest	0.463	18.0	729.2	0.421	21.1	741.5	0.409	55.4	1,454.8
Fixed assets	0.565	22.0	890.0	0.523	26.2	921.3	0.482	65.2	1,713.9
Stocks	0.444	17.3	699.1	0.264	13.2	464.4	.157	21.2	557.1
Debtors	0.565	22.0	889.2	0.434	21.7	764.1	0.206	27.8	731.1
Creditors	0.097	3.8	153.2	0.036	1.8	63.2	0.028	3.7	98.1
Excess liabilities ^a	2.069	80.5	3,258.4	2.521	126.2	4,436.8	3.343	452.3	11,883.6
Operating expenses ^b	0.685	26.7	1,079.3	0.643	32.2	1,131.6	0.650	88.0	2,311.2
Selling expenses ^c	0.409	15.9	644.5	0.467	23.4	821.3	0.201	27.2	714.4
Export duty	0.151	5.9	238.1	0.102	5.1	180.2	0.036	4.8	126.9
Sales	2.569	100.0	4,045.9	1.997	100.0	3,514.6	0.739	100.0	2,627.4
Shrinkage	0.183	7.1	288.0	0.189	9.5	332.8	0.041	5.5	144.9
Profit (loss)	-0.282	-11.0	-444.7	-0.574	-28.3	-1,010.9	-0.778	-105.3	-2,765.4
Purchases (\$m)	1.624	63.2	2,558.1	1.352	67.7	2,379.9	0.686	92.8	2,439.0
Purchases (tonnes)	635			568			281		

^a Over assets.

^b Includes interest.

^c Includes shrinkage but excludes export duty.

Source: Western Samoa Cocoa Board.

Cocoa Board costs per tonne of cocoa sold in 1986, 1987 and 1988 are presented in Table 13.4. By any standards the operating and selling expenses are excessive, notwithstanding the low volume handled. In Papua New Guinea, for example, the operating expenses of the Cocoa Industry Board are about 8 per cent of sales and the average marketing margin carried by Papua New Guinea's private exporters is also about 8 per cent of sales (see Chapters 3 and 5).

Table 13.4 Western Samoa Cocoa Board cost per tonne of cocoa sold, 1986-88

	1986		1987		1988	
	WS\$	Per cent	WS\$	Per cent	WS\$	Per cent
Purchase price	2,558	63	2,380	68	2,439	93
Operating costs	1,079	27	1,132	32	2,311	88
Selling costs	883	22	1,001	28	841	32
Total costs	4,520	112	4,513	128	5,592	213
Selling price	4,046	100	3,517	100	2,627	100
Deficit	-474	-12	-996	-28	-2,964	-113

Source: Western Samoa Cocoa Board.

Like the copra stabilization scheme, the cocoa stabilization scheme was not fully understood, the formula was incorrectly applied and price reviews were carried out infrequently (Hassall and Associates 1989). The net result was to exacerbate the Cocoa Board's financial position.

In 1986, the Cocoa Board introduced a 'special price' for good quality dried cocoa which did not require reconditioning. A premium of 5 per cent was paid on the prevailing price. In 1986 and 1987, premiums were paid on 17 per cent and 22 per cent respectively of total purchases, but most recipients of these premiums were large traders and plantations.

Recent marketing initiatives

A number of marketing initiatives have been proposed and/or partially implemented in recent years. In 1985, the Asian Development Bank commissioned a study which recommended the establishment of a Commodities Marketing Corporation for all commodities, with the objective of consolidating and streamlining marketing operations and reducing costs (Asian Development Bank 1986). The proposed corporate structure was perceived by the government to be too cumbersome. It felt that the underlying problems of each industry should be resolved before the formation of a marketing corporation.

Several years later, with the initiation of the second phase of the Cocoa Rehabilitation and Expansion Project funded by AIDAB, the marketing operations of the cocoa and copra boards were reviewed at the request of the government. These reviews recommended privatization of cocoa and copra physical marketing operations, leaving the boards to undertake purely regulatory functions. Legislation was prepared providing for funding of regulatory operations through a management levy and licence fees, and the

establishment of completely separate stabilization funds. Associated with each commodity act, draft regulations were prepared which described or defined key provisions, particularly as they related to grading, quality standards, processing and price arrangements.

As detailed in Section 3 of the Cocoa Act (1988), the functions of the Cocoa Board were to act in the best interest of cocoa growers of Western Samoa, particularly to control and regulate the growing, processing, marketing and exporting of cocoa. This was to be achieved through: (i) registration of processing and storage facilities; (ii) registration of dry bean traders and exporters; (iii) setting quality standards for Western Samoa cocoa beans, and monitoring these standards throughout the marketing chain; (iv) regulation of prices paid at all levels in the marketing chain; (v) operation of the Cocoa Stabilization Fund and stabilization arrangements; and (vi) establishment of an inspectorate for quality control.

The Cocoa Board still retained reserve power under the Act to trade in cocoa if in the national interest (and to facilitate the phasing out of its marketing activity). The most controversial activity is the continuation of the regulation of prices paid at all levels in the marketing chain since this tends to inhibit the development of marketing entrepreneurs.

The functions of the Copra Board under the proposed amendments to the Copra Act (1988) were: (i) to control and regulate the growing, processing, marketing and export of coconuts, copra, coconut oil and coconut products; (ii) to establish price support, price stabilization and price equalization within the copra industry; (iii) to promote the utilization of Western Samoa copra and coconuts; and (iv) to promote research and development programs for the benefit of the copra industry.

Similar to the Cocoa Board, the Copra Board was still to retain reserve power under the Act to trade in copra in the national interest, and to allow the phasing out of marketing operations and phasing in of the oil mill's purchasing operations direct from traders and producers.

These initiatives were stymied by the review undertaken by the Asian Development Bank under its Program Loan. The ADB assessment of the boards focused entirely on the operational and financial inefficiencies, and downgraded their key function of quality regulation to one of 'advice to the trade'. The Asian Development Bank ignored the proposed regulatory role of the boards (it was not mentioned in the ADB Program Loan document). Experience elsewhere, particularly in Africa, has indicated that abolition of marketing authorities without some form of quality safeguards has been followed by a rapid deterioration in quality, and disorderly marketing. The very minimum regulations which must be upheld are those relating to quality and standards.

The ADB recommended the replacement of the boards by a commodity pricing and market information unit, to be situated in the newly-formed Department of Trade, Commerce and Industry. The effectiveness of such an arrangement must be questioned on the grounds that this department has little

or no commodity contacts, little or no experience in the complexities of commodity trading and no understanding of quality requirements. The logical place for such a unit is in DAFF, where it would complement existing quarantine and inspection functions as well as provide a source of market information for planning and project purposes.

This view has been supported by the World Bank (1990) which recommended that even though direct marketing operations should be left to private traders, the government must maintain two critical functions in marketing. These functions were specified as quality and quarantine control and assistance in market promotion. The World Bank argued that the logical location for both of these functions is DAFF where it will contribute to institutional strengthening.

Notwithstanding these drawbacks, the government was committed to abolishing the boards as this was one of the conditions of the ADB Program Loan. (Another was the removal of all subsidies, including any form of price support.) On 1st October 1990, the Cocoa Act and the Copra Act were formally repealed, and the boards' operations were phased out. Subsequently, the government had second thoughts, and considered expanding the functions of the Agricultural Store to include cocoa and copra marketing. Such is the distrust of the private sector's ability to operate effectively where competition is limited.

Conclusion

After years of poor operational and financial performance by the copra and cocoa boards, the government of Western Samoa, at the instigation of the Asian Development Bank, has recently abolished them at one fell swoop. The ability of Western Samoa copra and cocoa producers to compete in international markets is seriously impaired because little or no attention has been paid to quality and regulatory aspects. The rewards for improving quality can be illustrated by the fact that WSTEC, during 1989, received approximately twice the world market price for its cocoa exports. Quality Samoan cocoa is very much sought after because it is regarded by the industry as 'fine or flavour' cocoa which is used by chocolate manufacturers to produce specific flavours in chocolate.

The oil mill has taken over the purchasing function of the Copra Board, but the mill's performance has been abysmal in recent years with frequent stoppages and substantial accumulated losses. It is proposed to privatize the mill but, with declining copra production and the non-viability of copra processing in the Pacific area, commercial venture partners (or a buy-out) are unlikely. In a study of copra milling in the Pacific, Wall (1986) concluded that 'the establishment of copra milling has not contributed to the economic welfare or development of the islands'. In the case of Western Samoa, he concluded that while the mill appeared to be technically efficient, it was economically inefficient. Given this situation, it is unlikely that copra producers would benefit from the abolition of

the Copra Board, but the government's disguised handouts to the industry will be very much reduced.

In future, it is essential that international agencies do not limit assessments of marketing boards to operational and financial efficiencies. Quality aspects and the need for export commodities to meet international trade standards must also receive serious consideration.

Postscript

Privatization of cocoa boards in major producing countries is of increasing concern to chocolate manufacturers and cocoa traders. The following are some comments made at the Annual Cocoa Dinner in 1990 attended by producers, manufacturers and traders. The Chairman of the Cocoa Association of London recently stated the effects (of privatization of cocoa boards) have been to condemn the exporters to selling in an already over-supplied spot market while reducing the quality of cocoa produced. Some traders feel the problem lies in losing guarantees of delivery—'Only a board can sell far forward with the guarantee from the state that the contract will be fulfilled'. Another dealer said 'If you privatize the system, no one is going to trust a private entrepreneur fifteen months ahead; the market will become a cash market'. These comments clearly demonstrate the concerns of the market.

CHAPTER 14

Commodity price stabilization: a Solomon's perspective

Solomon Ilala

At the theoretical level there would appear to be as many arguments for price stabilization as there are against. It is the contention in this chapter that the scales are tipped in favour of price stabilization at a pragmatic level. A practical approach is argued, tailored to experiences with price stabilization in Solomon Islands.

The issues addressed in this chapter are:

- arguments supporting the operation of stabilization schemes by marketing authorities in South Pacific island countries;
- the relative merits of different types of stabilization schemes and suggestions for the most suitable schemes for Pacific island export commodities; and
- the effectiveness of stabilization as a development policy initiative.

But before discussing specific aspects of stabilization, it is important to outline the economic context in which the price stabilization schemes operate in Solomon Islands.

Economic context

Two characteristics dominate the economy in Solomon Islands: its openness and a heavy reliance on the primary industries export sector, imports and aid flows; and the provision of public goods and services by the government, which constitutes a large part of national output and is a key factor in determining economic performance.

Since independence in 1978, Solomon Islands has continued to rely heavily on the primary export sector, imports and aid flows to meet economic development goals. As such, performance has continued to be influenced by

external factors, inevitably resulting in disturbances being transmitted to the domestic economy. The primary export sector has dominated total exports (see Chapter 2 by Antony and Fleming) and contributes substantially to national output in Solomon Islands. Its share of GNP averaged almost 70 per cent over the period 1986–89 (Solomon Islands, Central Bank 1989).

The government has advised that it will pursue stabilization and growth-oriented macroeconomic policies to improve economic performance. Its success, however, depends largely on the key instruments and inputs that provide the framework for such macroeconomic policies. Each policy instrument must be fine-tuned to respond adequately to the type of external disturbance transmitted to the domestic economy.

Importance of copra and cocoa to the rural population

The production and export of palm oil and kernel, fish, logs and timber are handled largely by foreign-owned enterprises and joint-venture companies (Solomon Taiyo Ltd and Solomon Islands Plantations Ltd). Direct benefits arising from their export performance are principally enjoyed by the government (taxes), land owners (royalties) and the organizations themselves (as a large component of their costs is foreign).

Within the copra and cocoa industries, the contributions from the smallholder and plantation sub-sectors have varied. Copra is the principal source of cash income for most rural village dwellers, now increasingly followed by cocoa. From the 1986 census, out of a total population of 285,796 persons, approximately 44,900 (16 per cent) were estimated to reside in urban and semi-urban areas leaving 240,896 persons, or 84 per cent, of the total population living in rural communities throughout the country. The copra industry has maintained a relatively low rate of growth of less than 2 per cent over the period 1975–86. The negative growth in the plantation sector is responsible for this low figure. After the second world war, some plantations or estates resumed production but at below full capacity. In other cases, planters never returned. Smallholder copra production overtook plantation production in 1962, and has remained dominant since then. Much of this boost to the smallholder sector came from the Coconut Subsidy Scheme which operated from 1965 until 1976. Reliance on cash incomes from copra is very broad-based, and extends beyond the rural communities to activities in the trading and financial, transport and utilities, social and personal services sectors. The cocoa industry is emerging as a major export industry, with the impetus coming from the plantation sector but with the smallholder sector following closely behind.

As the ultimate objective of the government is to achieve meaningful socio-economic development through structural change and real growth, it is paramount that clearly-stated and practical structural adjustment policies, together with appropriate stabilization policies, be adopted. Policy decisions made at the national or industry level on the development of the copra and cocoa industries which have a considerable impact on the economic well-being

of most Solomon Islanders must therefore be clearly stated, easily understood and as practical as possible. One option available to the government is to reduce fluctuations in smallholders' incomes by ensuring that prices paid to producers for exports do not fluctuate as much as they do internationally. This can be achieved through effective price stabilization arrangements. The main question to answer is whether stabilizing the village-gate copra price is the right tool to use in dealing with macroeconomic instability. Is it an incentive to production and growth, and do smallholders and other producers gain from the exercise?

Export price, volume and revenue variations

External disturbances in the primary export sectors are caused principally by fluctuating prices on the world market for the various commodities.

Tables 14.1 and 14.2 show quantity and value variability for the main primary exports. It can be seen from Table 14.1 that fish, palm products and cocoa exhibit high quantity variations. Table 14.2 shows that export revenue instability is quite pronounced for copra, cocoa and timber. Palm products exports were particularly affected by Cyclone Namu in mid-1986. It is evident in Table 14.2 that the aggregate instability of exports is much less than the sum of the individual effects because values and volumes covary negatively in some cases. These relationships highlight a potential danger: where negative covariance exists, stabilization may exacerbate the situation.

Table 14.1 Variability in volume of Solomon Islands principal exports, 1975–87

Year	Copra (tonne)	Timber (‘000 cubic metres)	Fish (tonne)	Palm products (tonne)	Cocoa (tonne)
1975	27,477	213	4,700	-	160
1976	23,015	243	12,909	3,799	125
1977	26,915	240	10,602	7,546	164
1978	32,115	245	11,216	12,384	240
1979	31,619	267	24,333	14,824	286
1980	31,679	265	22,490	18,205	365
1981	31,810	222	24,542	19,814	586
1982	33,946	340	16,472	22,008	624
1983	25,519	343	32,340	24,423	1,233
1984	42,042	398	34,126	25,071	1,409
1985	43,557	334	28,391	22,729	1,753
1986	32,431	440	40,831	17,732	2,037
1987	27,903	286	27,991	13,994	2,696
Variability	3.244E+8	4530	1.041E+9	4.055E+8	6.601E+6
SD	696	67	10,207	6,368	812
Mean	31,541	295	22,380	16,877	898
COV (per cent)	18	23	46	38	90

Source: Solomon Islands, Statistics Office, *Statistical Yearbook*, various issues; *Statistical Bulletin No. 14/87*, Honiara, 1987b (and previous issues).

Table 14.2 Variability in revenue of Solomon Islands principal exports, 1975-87
(SI\$'000)

	Copra	Timber	Fish	Palm products	Cocoa
1975	4,661	3,131	2,778	-	112
1976	3,634	6,236	7,385	1,213	201
1977	7,988	7,888	8,283	3,176	553
1978	10,212	7,124	7,554	5,074	596
1979	16,067	15,867	16,932	7,286	648
1980	10,476	15,984	23,179	6,218	637
1981	8,050	16,070	21,965	7,094	893
1982	8,078	22,848	13,966	7,340	895
1983	8,375	19,975	29,200	8,796	2,259
1984	32,199	30,059	28,799	19,097	3,366
1985	23,471	24,744	31,956	13,746	5,009
1986	5,951	35,727	52,927	6,023	6,472
1987	10,256	37,173	52,580	7,628	9,540
Variability	6.015E+8	1.143E+9	2.423E+9	2.023E+9	7.905E+7
SD	7,756	10,693	15,567	4,498	2,812
Mean	11,494	18,679	22,885	7,724	2,399
COV (per cent)	67	57	68	58	117

Source: Solomon Islands, Statistics Office, *Statistical Yearbook*, various issues; *Statistical Bulletin No. 14/87*, Statistics Office, Honiara, 1987b (and previous issues).

The relative importance of copra to total export earnings declined from 28 per cent to 12 per cent between 1975-77 and 1985-87. Fish products increased in overall importance, from 30 per cent to 39 per cent, as did palm products, from 6 per cent to 8 per cent. This latter figure would have been substantially higher if Cyclone Namu in 1986 had not dramatically reduced production (Table 14.2). Cocoa exports increased from 1.6 per cent to 5.8 per cent, while timber products remained static at 28 per cent.

Implications

The openness of the Solomon Islands economy and lack of influence in determining export prices are key factors in the transfer of external instability to domestic instability. This instability is reflected in the balance of payments and level of domestic expenditure because exports account for such a high proportion of national output. Appropriate macroeconomic policies are needed which will effectively counteract cyclical disturbances. Price stabilization measures are more appropriate than conventional counter-cyclical fiscal policies because as Guest (1985) has argued: (i) widely fluctuating levels of government expenditure have an adverse effect on investment; (ii) there is a tendency for spending to leak into imports, as foreign exchange is a large proportion of the reserve assets of the banking system; and (iii) fluctuations tend to be too large, and the domestic multiplier too small, for a government to spend its way out of a recession without great cost.

Rationale for price rather than quantity stabilization

Export instability as demonstrated above may involve price and/or quantity fluctuations. Price stabilization measures are generally favoured for very practical reasons. For example, quantity fluctuations are frequently the result of adverse climatic conditions which are difficult to predict. In addition, the day-to-day operations of a quantity scheme are more difficult because of the longer lags in the availability of quantity data compared with price data. Even if such a scheme were implemented there is an inherent bias towards supply reduction, since the same revenues could be realized by reducing sales. For these reasons, price stabilization is generally preferred to volume and revenue stabilization.

In Solomon Islands, the main objective is to stabilize prices to growers around the underlying world market trend. Supporting objectives are to promote:

- operational efficiency of individual producers, particularly as it relates to production and investment decisions;
- general economic stability; and
- confidence in the industry, by reducing the uncertainty relating to future prices.

It can be seen from the above objectives that price stabilization involves both macro and micro aspects. These aspects are discussed in turn.

Macro aspects

There is much debate at a theoretical level whether the effects of export instability on economic growth are harmful. MacBean (1966), Lim (1976) and, more recently, Jarrett and Anderson (1989) have demonstrated that there is no significant negative relationship between growth of real GDP and export stability whereas Garnaut and Baxter (1984) and Guest (1985, 1987, 1989) have demonstrated that uncertainty has a disruptive impact on export earnings, and hence on economic stability and growth. Anderson, Hazell and Scandizzo (1977:908) claimed that the theoretical arguments have been overtaken by what they call 'the pragmatic policy approach' adopted by governments and international agencies. They have argued that 'in the real world, uncertainty causes markets to fail almost anywhere'. One example of this pragmatic approach to counteract uncertainty is the United Nations Common Fund for commodities which was established to stabilize price and supply levels of key international commodities including cocoa, coffee, copper, hard fibres, jute, rubber, sugar and tea. Thus, the pragmatic policy approach has won the day at an international level.

In Solomon Islands, the Commodities Export Marketing Authority (CEMA), adopting a practical stance, supports the view that export instability is harmful. This view is supported by Guest (1985:16) who argued that:

The stabilization problem of an advanced industrial economy is usually expressed in terms of maintaining near full employment and a low rate of inflation. Cyclical disturbances in such economies are more often than not of domestic origin, and governments have used fiscal and monetary policies to counter short-term fluctuations in the level of aggregate demand and thereby maintain internal balance.

The stabilization problem faced by the Pacific island economies is rather different. The causes of instability are largely external ... and thus beyond the direct control of domestic policy instruments.

The Solomon Islands Central Bank (1989) has supported this argument by stating that external disturbances, when transferred to the domestic economies, are 'so strong that they can seriously disrupt progress towards a desired rate of development'.

In summary, the macro arguments in support of a commodity stabilization scheme in Solomon Islands are:

- The openness of the economy and lack of influence in determining export prices are key factors in transmitting export instability to the domestic economy.
- Instability necessitates appropriate macroeconomic policies to counteract cyclical disturbances effectively.
- Conventional counteracting fiscal policies are not appropriate because of the tendency for spending to leak into imports, and also because of the adverse effect on public and private investment plans of large fluctuations in government expenditure.
- Price stabilization measures are more appropriate in that they alleviate export price fluctuations at the producer level.

Further, the macro impact of instability in copra and cocoa export revenue on the economy is significant, and only a pragmatic policy tool such as price stabilization would have the desired effect of counteracting volatile price cycles. Copra and cocoa together will have an increasingly major impact on export earnings in future. Copra in a good year of high world prices can account for as much as 28 per cent of export revenues, although in a recent year of low prices it accounted for only 8 per cent. Considerable new investment in coconut and cocoa is currently being undertaken. CEMA projects output growth of 50,000 tonnes for copra and 5,000 tonnes for cocoa by 1995. Prices of copra and palm products are highly correlated and, together, their price movements can have a major impact on the economy (see Table 14.2). The multiplier effects of copra and cocoa are high because they provide cash incomes for the majority of the rural population.

For example, high commodity prices prevailed in 1984, particularly for copra and palm oil. At this time, an increase in export duty was considered but the demonetized fund policy was adopted instead. An increase in export tax is often advocated in periods of high prices (e.g. see Chapter 6 by Fleming), but there is no assurance that funds siphoned off in these periods would be returned to growers in periods of low prices. Payment out of export tax reserves in periods

of low prices is not assured because the government may change or policies may change. The Solomon Islands Copra Fund was set up as a trust fund on behalf of growers, and can only be used for price support. This is also the case in Papua New Guinea and the integrity of these funds is a credit to the boards.

Micro aspects

The theoretical debate at the micro level is as perplexing as that at the macro level, particularly on issues which relate to the distribution of gains and losses. Newberry and Stiglitz (1981) made a major contribution to microeconomic analysis of price stabilization through the development of simple models which provide a means of assessing the impact of stabilization. They concluded from their theoretical and empirical work that the benefits of price stabilization are small compared with the likely costs of operating a buffer stock scheme, and their distribution does not necessarily favour producers. There are several shortcomings in the micro analysis, specifically their treatment of consumer benefit which ignores the inflationary cost to consuming countries of price instability and also the effect of automatic consumption (i.e. consumption driven by habit). Furthermore, the authors demonstrate that the distributional impact of price stabilization is very sensitive to the parameters and assumptions underlying demand and supply. This is highlighted by the fact that they reached the opposite conclusion on the transfer of benefits to that drawn by Behrman (1979).

Behrman's results are supported by Turnovsky (1977) who demonstrated through applied welfare economics that producers are usually the main beneficiaries of price stabilization. Once again, it is the pragmatic aspects which are more influential in the Solomon Islands context. They include:

- Price signals in Solomon Islands and, indeed, other Pacific countries do not always result in classical economic responses. Because of the subsistence nature of the rural economy, traditional and social obligations may have preference over increased outputs.
- Price instability can disrupt transport arrangements to remote islands and areas. Reduced production in response to lower prices can make transport arrangements uneconomical. Inter-island and coastal shipping rely on stable prices to provide the attraction to backload copra from remote origins on a regular basis.
- Price instability can cause serious poverty problems for smallholders although, as Fleming and Piggott (1989) pointed out, the validity of this argument depends on the extent to which producers are reliant on a particular export commodity for their livelihood. Copra throughout Solomon Islands is still the main source of cash income, paying for school fees, local taxes and purchased foodstuffs.
- Price instability can have a negative impact on investment and maintenance decisions by smallholders.

The last point is difficult to demonstrate with statistics, but Manning (1987:78) has argued that stabilization helps investor confidence:

In general I believe that stability of prices is more important in a newly developing country. Investors are nervous about many aspects of these countries and all agriculture is a long term investment. Anything that is going to increase the feeling of stability into the long term is obviously going to help investor confidence. Unfortunately I am forced to admit that the anti-cyclical effects of stabilization funds probably contribute to that stability which encourages investment.

The international debate on price stabilization has recently been taken up in Papua New Guinea with Jarrett and Anderson's (1989) criticism of stabilization schemes. Most other analysts have regarded these schemes as successful. The World Bank (1988:13) commented:

Papua New Guinea has operated price stabilization funds for the major export commodities for many years. Although the formulae vary by crop, each scheme tries to reduce price fluctuations by assessing a long-run moving average price, and extracting a levy (or paying a bounty) whenever the current price gets too far out of line with the reference price. The Papua New Guinea funds are widely recognized as having been successful and therefore an exception to the generally poor record of such schemes elsewhere. They have gone a long way to stabilize prices during a turbulent time, and have been well managed.

Their view echoed the opinion of Garnaut and Baxter (1983:164):

The commodity stabilization funds have contributed to monetary stability and their role should be strengthened and extended.

A number of other analysts have also supported the role of price stabilization funds including Shaw (1985), Guest (1987, 1989) and Gumoi (1989).

These favourable comments are in direct contrast to those of Jarrett and Anderson (1989:73):

To summarize, this analysis suggests that agricultural price stabilization schemes operating in Papua New Guinea have made little if any contribution to macroeconomic stabilization, and in any case the monetary and fiscal policy instruments in place could accommodate agricultural export earning fluctuations and be more efficient than stabilization schemes for achieving this macro objective. At the same time, these schemes have imposed on growers a form of forced savings which, it can be argued, has reduced the degree of investment and productivity growth in export-oriented agriculture. Moreover, the stabilization schemes have done very little to stabilize producers' incomes from agricultural exports and have reduced their average export earnings.

These adverse views warrant comment. Their macro analysis over-simplifies the situation. Guest (1989) has provided a more in-depth analysis of the stabilization problem and why Papua New Guinea stabilization policies are more appropriate than other counter-cyclical fiscal and monetary policies. However, it is at the micro level where Jarrett and Anderson's analysis lacks a pragmatic approach.

Their comment that the schemes are 'a form of forced saving which ... has reduced the degree of investment and productivity growth' is not based on statistical evidence. Manning (1987), who is personally involved in substantial

agricultural investment, has argued that stabilization encourages investment. In any case, 'forced saving' is much more palatable to growers than the main alternative of a variable export tax, a form of lost revenue! Further, Jarrett and Anderson's analysis is biased towards coffee. Coulter (personal communication 1990) has argued that the rapid growth of cocoa exports in Papua New Guinea from 27,000 tonnes in 1980 to over 47,000 tonnes in 1989 was a result of the introduction of cocoa hybrids and the stable investment climate because of the security of the cocoa stabilization fund.

Tobacco, beer and vehicle sales are highly correlated with commodity prices in Papua New Guinea. A discussion with any of the major companies involved with these sales would provide evidence that high commodity prices do not necessarily translate into productive investment.

Another statement by Jarrett and Anderson (1989:71) that 'in the case of coffee, for example, producer prices rose on average by only K31 per tonne per year between 1976 and 1986, whereas they would have risen by K263 per tonne without the scheme' is simply a quirk of the analysis period. The period 1976-1990 would provide the opposite result. This analysis ignores the K116 million in the coffee stabilization fund at the end of 1986, and also ignores the cost of stockholding which is taken out of the fund. Based on the total exports of 515,700 tonnes over the period 1976-86, the fund represents a 'saving' of K226/tonne to growers which, together with the stockholding costs and the average rise in price which Jarrett and Anderson calculated at K31/tonne, would exceed the non-stabilized price rise of K263/tonne.

Coulter (personal communication 1990) has also taken issue with the statement that market uncertainties lead to conservative price-setting rules. He argues that this may have been the case with coffee but has certainly not been the case with copra or cocoa. A major shortcoming of the copra scheme is that the stabilized price has followed too closely the international price, exacerbated by political interference in the price-setting mechanism in 1983.

The present demise of the cocoa stabilization fund resulted from the price-setting rules not being conservative enough (in hindsight). Each year, the price-setting mechanism was justified on the basis of the World Bank price projections and their likely impact on fund drawdown. The Bank's cocoa projections in the 1980s have proven to be too optimistic, and thus the drawdown on the fund has been much larger than projected.

Notwithstanding the marginal analysis of Jarrett and Anderson, the stabilization funds in Papua New Guinea have represented a high proportion (23 per cent) of total money supply over the period 1976 to 1984 (Kiele 1987). They have also represented a large proportion of gross domestic saving, varying between 31.7 per cent and 143.3 per cent over the period 1977 to 1984 (Goodman, Lepani and Morawetz 1985). The macroeconomic stabilization effect of the funds has been restricted because only a portion of the funds, about 50 per cent, has been sterilized over the period 1978 to 1987 (Guest 1989).

Fleming (1986) argued that copra producers in Solomon Islands are indifferent to price risk, but qualified his results on the basis that variance may not be an appropriate measure of price risk, the period of analysis may be too

short and price risk may not be an important consideration in producing copra for export. Coulter (1989a) elaborated on the possible reasons for this indifference to risk.

First, under a stabilization regime, producers are expected to be indifferent in any case.

Second, analysis showed the price elasticity of supply is only 0.2 compared with substantially higher earlier estimates ranging from 0.54 to 0.62, based on the same three models. Even if unstable prices were used, these higher figures could mask any price risk response.

For the reasons outlined above, the interests of smallholders are best served through stable prices which facilitate investment in, and maintenance of, agricultural export industries and provide a regular source of cash income. This is supported by Schmitz (1984:1) who found that 'generally price stabilization leads to a net welfare improvement especially in those cases where it is accompanied by income stabilization'.

Types of stabilization schemes in Solomon Islands

Since the inception of the Copra Board in 1953, the forerunner to the Commodities Export Marketing Authority (CEMA), three forms of price stabilization have been considered: cost-plus strategy; moving-average price strategy; and survival price strategy. These shifts in stabilization strategy closely follow those in the major agricultural export industries in Papua New Guinea (see, for example, Chapter 11 by Gimbol). Each strategy is discussed in turn.

Cost-plus strategy

This strategy, used by the Cocoa Board, involved establishing a price which covered the cost of production and a fixed profit margin. During periods of high prices, a reserve fund (called the Accumulated Fund) would be built up but reduced in times of low prices. There was no formal procedure for price determination. Instead, the Cocoa Board would consider the following key factors:

- the most recent reserve position
- operating costs
- forecast of trends in world markets
- producer price response, based on past volume/price relationships
- estimated present farm gate price excluding bounty or levy (based on c.i.f. copra price (FOSFA) minus freight, insurance and commission, plus premiums to obtain a calculated f.o.b. price, less board administration and marketing costs, export duty and allowances for internal freight and quality).

This informal system with minor modifications operated from 1953 until 1985, but there was an underlying tendency for the Cocoa Board to maintain

prices at a constant level for many months even though the c.i.f. price may have been fluctuating from the original benchmark level. In times of high prices, surpluses would be paid into the Accumulated Fund and, conversely, in times of low prices, prices would be supported from the Accumulated Fund. Since 1987, this informal cost-plus strategy has been re-adopted.

Moving-average price strategy

The concept of a moving-average price strategy was introduced in May 1985 by an adviser to CEMA. This was the first formal attempt by CEMA to introduce a scheme which was based on a prescribed formula. The principle of this strategy was to smooth price fluctuations around the long-term trend based on c.i.f. values in the previous year, converted to constant terms of the previous year using the World Bank Manufacturing Unit Value (MUV) Index and adjusted to base price (threshold price in producer price terms) by deducting freight, CEMA operating costs, export duty and premium.

The scheme was based on principles similar to those applied in the Papua New Guinea copra price stabilization scheme. Although adopted in principle, it was not implemented. The CEMA Board was reserved about its general applicability to the situation in Solomon Islands, and decided to monitor the operation of the scheme and its impact on prices over a period of months before adopting it in practice. Using the proposed formula, a base price of SI\$435/tonne was determined. In theory, when prices went above SI\$435/tonne, 50 per cent of the excess would be paid into a stabilization fund and, conversely, when prices went below the base price, 50 per cent of the deficit would be paid out of that fund.

A separate fund, called the Domestic Price Support Fund, was established in May 1985 by the transfer of SI\$10 million from the previous Accumulated Fund, a general reserve fund. Two provisos relating to the formula were agreed: the maximum bounty should not exceed SI\$100/tonne, and the fund should not exceed SI\$10 million.

Although monitoring continued for a period, the scheme was never introduced and monitoring was disbanded in 1986 in the face of rapidly declining international prices. No attempt was made to update the base price in 1986 as the actual figure of SI\$435/tonne related only to 1985 values.

Another price stabilization scheme for cocoa is being considered by the CEMA Board based on the moving-average price strategy to determine the threshold or base price. Analysis of f.o.b. price data over a 20-year period has shown that a 7-year moving average would have been more efficient at reducing grower price variability than other lengths of moving average. The cost of implementing such a scheme when the world price is at its nadir is the major constraint to its introduction.

Survival price strategy

A survival price strategy was introduced in March 1987, somewhat belatedly, following a prolonged period of low grower prices ranging from SI\$230/tonne to SI\$250/tonne (first grade) during 1986 and 1987. The survival price was the estimated cost of production, based on the following figures:

	SI\$/tonne
Lever Solomons Ltd	324 ^a
Land Use Division (18 plantations)	306 ^a
Smallholders	290
Approximate average	300
^a Excludes cost of fertilizers.	

The SI\$300/tonne represented the cost of production in terms of 3rd grade copra with premiums of \$30/tonne and \$20/tonne for 1st and 2nd grades, respectively.

Supporting this survival price strategy was the fact that receivals had been declining in late 1986 to such a level that CEMA was unable to meet contract commitments in November and December. This in turn affected price allocation against estimated shipments (and also reduced overseas confidence in Solomon Islands as a reliable shipper).

The survival price strategy operated from March 1987 to September 1987 at which time the Board reverted to the informal cost-plus strategy (see above). During this period, prices rose rapidly on the world market from around US\$250/tonne to US\$320/tonne, a 28 per cent increase. The reason for moving the benchmark price upwards in September 1987 was concern once again about meeting contract commitments. Receivals in that month were approximately 16 per cent below contract commitments.

Effectiveness of price stabilization

The stabilization arrangements in Solomon Islands for copra have operated on an ad hoc basis, without a predetermined stabilization formula which is normally associated with such schemes. Nevertheless, the arrangements have been reasonably successful in stabilizing prices, as the following analysis indicates. Four criteria have been used to assess performance of these schemes:

- effective stabilization of prices at the producer level;
- efficient structure and management;
- capacity for self-financing and balancing over time; and
- predictable operations.

Effective stabilization at the producer level

Statistical analysis has shown that existing stabilization arrangements have been successful in reducing grower price instability. This is illustrated generally for Pacific island countries by Hardaker and Fleming (1986:25) and is shown specifically for Solomon Islands in Table 14.3.

Table 14.3 Comparison of stabilized and unstabilized copra prices in Solomon Islands, 1972-87

Year	Stabilized price ^a (SI\$/tonne)	Unstabilized price ^b (SI\$/tonne)
1972	81	94
1973	104	106
1974	256	330
1975	194	162
1976	100	105
1977	173	245
1978	209	240
1979	320	394
1980	325	281
1981	283	185
1982	231	183
1983	266	223
1984	480	595
1985	382	383
1986	344	217
1987	268	163
Variability	10,929	16,020
SD	105	127
Mean	251	244
COV (per cent)	42	52

^a Stabilized prices were calculated from copra receival data as per Annual Accounts but adjusted in 1985, 1986 and 1987 for price support. Accounts were based on October-September year 1972-84, October-June (9 months) 1985 and July-June year for 1986 and 1987. Prices represent an average of all grades.

^b Unstabilized prices were calculated from f.o.b. sales value adjusted for freight allowances, direct Board/CEMA costs, administration costs and export duty as detailed in the Annual Accounts. Accounts based on October-September year 1972-84, October-June (9 months) 1985 and July-June year for 1986 and 1987. Prices represent an average of all grades.

Source: Solomon Islands Commodities Export Marketing Authority.

Hardaker and Fleming (1986) compared the variances of c.i.f. and f.o.b. prices in five Pacific island countries, and found that Solomon Islands achieved the greatest reduction in grower price instability. In Table 14.3, it is further illustrated that CEMA has been reasonably successful in its conduct of price stabilization. Using variance as a crude indicator of price instability, the coefficient of variation for stable prices to the grower is 42 per cent compared with 52 per cent if prices had been unstabilized.

The benefit from stable prices is indicated by the mean prices of SI\$251/tonne versus the unstable mean price of SI\$245/tonne and the benefit is greater when the fund balance of SI\$3.2 million, as of June 1987, is taken into consideration. Thus, Solomon Islands growers have benefited from price stabilization. This is contrary to Jarrett and Anderson's (1989) conclusion on the Papua New Guinea coffee stabilization scheme. As men-

tioned above, however, their result is a quirk of the analysis period and they failed to take the stockholding function into consideration.

However, there is scope for improvement in stabilized or smoother prices, as illustrated in Figure 14.1 in which stabilized, unstabilized and desired stabilized prices are plotted. It shows that stabilized prices followed too closely the

unstabilized prices compared with the desired effect of stabilizing prices. Based on this analysis, CEMA had collected insufficient levies in high price periods between 1972 and 1987.

Fleming (Chapter 6) has taken issue with presenting prices in nominal terms as in Table 14.3, but Guest (1989:23–4) has succinctly presented the case that nominal values are more appropriate:

Economists have a penchant for a series of values over a period of time in 'constant prices' to try and overcome the problem that one kina today is not worth the same as one kina tomorrow. However, that sort of thinking is out of place in the context of commodity price stabilization schemes. A price is an inherently nominal phenomenon. It is nominal (actual) price variations that the schemes have to moderate around the trend in nominal commodity prices. If in the long-run prices are not at least keeping up with the rate of inflation, then questions about resource allocation have to be considered. However, those considerations should not be allowed to confuse the guidelines for short-run price stabilization.

Figure 14.1 Desired stabilized price to copra producers compared with actual stabilized and unstabilized prices in Solomon Islands, 1970–87

Source: Data in Table 14.3, plus the desired stabilized prices based on a 10-year moving average of price data obtained from the Copra Board and CEMA.

Efficient structure and management

There are three cost categories associated with operating the copra stabilization fund which indicate the efficiency of price stabilization schemes: administration costs, the opportunity costs of investment of growers' funds, and the economic costs stemming from any misallocation of resources.

As illustrated in Table 14.4, the total administrative costs of operating the Copra

Table 14.4 Determination of producer price for copra in Solomon Islands, July 1987 to December 1988

	SI\$	Per cent
Total amount available to producer	486	100
Less		
Difference between 1st, 2nd and 3rd grades	22	5
Marketing and handling costs	16	3
Salaries and wages	12	2
Office and transport facilities	15	3
Other indirect costs (CEMA, buying centres, audit, etc.)	16	3
Export duty	33	8
Domestic price stabilization fund	12	2
Producer price	360	74

Source: Solomon Islands Commodity Export Marketing Authority.

Table 14.5 Interest earned on Solomon Islands copra stabilization fund

Year ending	Total interest (SI\$)	Average fund (SI\$)	Interest earned ^a (per cent)	Bank rate ^b (per cent)	Difference (per cent)
June 1988	482,478	3,954,531	12.2	10.60	1.60
June 1987	564,030	4,661,651	12.1	10.85	1.25
June 1986	995,820	8,036,553	12.4	9.83	2.57
June 1985	1,115,223	10,769,359	10.4	7.71	2.69
September 1984	552,913	8,873,275	6.2	7.09	-0.89
September 1983	435,703	5,477,258	8.0	6.65	1.35
September 1982	331,895	4,968,420	6.7		
September 1981	379,480	6,207,016	6.1		

^a As a percentage of fund balance.

^b Interest rate offered by the Central Bank for 6-12 month deposit.

Source: Solomon Islands Commodities Export Marketing Authority; Central Bank of Solomon Islands, Honiara.

Fund for the 18 months ending December 1988 were quite small. The actual cost of managing the fund is estimated to be SI\$5000 to \$6000 per annum, and is thus quite insignificant in relation to interest earned. No costs are charged directly against the fund, but are taken up in the general operating costs of CEMA.

The return on fund investments has been estimated in Table 14.5. In the 6 to 12 months deposit category for the period 1983 to 1988, CEMA earned an average 1.43 per cent over the bank rate. With regard to the opportunity cost for the grower, only the larger grower would have access to this deposit rate, while most smallholders would only have access to the much lower passbook saving rate.

CEMA has always invested producer funds in interest-bearing deposits with commercial banks. In 1984 the Central Bank offered this same facility at competitive rates but, since then, most of these funds have been transferred to operating accounts with commercial banks; only a small amount is still held in development bonds with the Central Bank. Investment of funds overseas or in speculative areas is prohibited by the Central Bank.

Table 14.6 Resource allocation in Solomon Islands copra

Year	Unstabilized price (SI\$)	Stabilized price (SI\$)	Bounty (levy) (SI\$)	Stabilized receival volume (tonne)	Stabilized receival value (SI\$)
1987	163	268	105	27,468	7,528
1986	217	344	127	38,556	13,918
1985	383	382	(1)	41,119	15,268
1984	595	480	(115)	41,748	20,428
1983	223	266	43	26,293	6,998
1982	183	231	48	32,723	7,418
1981	185	283	98	33,592	9,918
1980	281	325	44	29,483	9,918
1979	394	320	(74)	33,221	10,228
1978	240	209	(31)	27,911	5,918
1977	245	173	(72)	28,432	4,918
1976	105	100	(5)	23,164	2,316
1975	162	194	32	28,145	5,118
1974	330	256	(74)	24,329	6,118
1973	106	104	(2)	15,196	1,518
1972	94	81	(13)	23,474	1,918
Total				474,854	128,418
Average				29,678	8,218
Net					

^a Price elasticity of supply is assumed to be 0.2 (Fleming 1986).

^b Net welfare loss (gain) as a percentage of the total value of copra output.

Source: Solomon Islands Commodities Export Marketing Authority.

The economic costs of possible misallocation of resources arise from changing the prices to which producers respond. In periods of high prices, stabilization schemes dampen incentives to invest while the opposite occurs in periods of low prices. The reduction or increase in production represents the economic cost or welfare loss to society. Table 14.6 summarizes results of an analysis of possible resource misallocation of the stabilization scheme and ensuing loss to producers in Solomon Islands.

While further analysis of risk-reducing benefits to offset revenue loss could be pursued, CEMA considers that the interest earned on funds is significant enough to offset any possible revenue losses to producers who only have access to the much lower interest-bearing passbook accounts.

Self-financing and balancing over time

CEMA, and its predecessor the Copra Board, has maintained a positive balance in the Copra Fund since 1972 (selected as the first year of analysis). This is a remarkable achievement given the huge variations in international prices during this period, in particular, over the past few years. Only in early 1976 and again in 1987 were bounty payments constrained to preserve the longevity of the funds.

Analysis of changes in fund size relative to copra sales in Table 14.7 shows

that the funding requirement to stabilize price (i.e. funds as a percentage of sales) has increased substantially. The fund size averaged 26 per cent of sales from 1972 to 1976 and 54 per cent from 1983 to 1987. The greater variability in copra prices in the more recent period was responsible for the larger stabilization reserves.

Predictable operations

A feature of the copra stabilization scheme in Solomon Islands is that it has been kept as simple as possible so that it can be easily understood. This ensures that its operations are predictable by all people affected by it.

Table 14.6: Copra stabilization fund, 1972-87

Unstabilized receival volume ^a (tonne)	Unstabilized receival value (SI\$m)	Net welfare loss (gain) (SI\$m)	Proportion ^b (per cent)
25,316	4.126	3.235	2.51
35,709	7.749	5.514	4.28
41,141	15.757	(0.494)	(0.04)
43,748	25.030	(5.991)	(4.65)
25,443	5.674	1.320	1.02
31,363	5.739	1.820	1.41
31,265	5.784	3.722	2.89
28,685	8.060	1.522	1.18
34,757	13.694	(3.064)	(2.38)
28,739	6.897	(1.064)	(0.83)
30,799	7.546	(2.627)	(2.04)
23,396	2.457	(0.140)	(0.11)
27,217	4.409	1.051	0.82
25,736	8.493	(2.264)	(1.76)
15,254	1.617	(0.037)	(0.03)
24,227	2.277	(0.376)	(0.29)
172,795	126.310		
29,550	7.894		
		2.127	1.64

Table 14.7 Solomon Islands Copra Fund balance and as percentage of sales, 1972-87^a

Year	Fund year-end balance ^b SI\$	Copra sales ^c SI\$	Fund as per cent of sales
1972	708,443	2,643,819	27
1973	523,026	1,744,979	30
1974	2,366,379	10,428,954	23
1975	975,517	6,681,719	15
1976	1,262,375	3,504,457	36
1977	3,267,581	8,704,415	38
1978	4,448,039	8,595,142	52
1979	7,767,537	16,186,087	48
1980	7,242,626	11,195,033	65
1981	5,171,406	8,168,692	63
1982	4,765,434	7,421,729	61
1983	6,189,082	8,421,729	73
1984	11,557,467	28,745,085	40
1985	9,981,250	19,523,552	51
1986	6,091,855	10,825,221	56
1987	3,231,447	6,789,981	48
Mean	4,721,842	10,002,205	45

^a The 1972-84 Fund was called Accumulated Fund, and was a general reserve fund. In 1985, a Domestic Price Stabilization Fund (DPSF) was established. In 1987, the DPSF was divided into the Development Fund for longer-term investment and DPSF for short-term stabilization requirements.

^b Fund balances are taken from the annual accounts of the Copra Board and CEMA. Balances from 1985 to 1987 exclude drawback funds.

^c Copra sales are taken from the annual accounts of the Copra Board and CEMA.

Source: H.K. Coulter, An assessment of cocoa and copra price stabilization arrangements. Unpublished report prepared for Solomon Islands Commodities Export Marketing Authority, Honiara, 1989.

Recommended price stabilization arrangements

Based on experience with stabilization schemes in Solomon Islands, a formal moving-average stabilization scheme would seem appropriate to the Pacific islands as its operation is transparent and predictable to growers. Recently, CEMA has been investigating improved stabilization formulae based on a computer model developed by the Australian Bureau of Agricultural and Resource Economics for Papua New Guinea but adapted to more practical applications.

The model is based on a series of equations representing the operations of various specifications of formulae. The equations are then used to determine certain variables

which take on different values under different conditions. These variables are the threshold price, bounty and levy rates, current fund size, implied grower price and exports over future years (which includes a supply response coefficient).

The model can be used to compute values for these variables which can then be compared with a set of pre-specified constraints. These constraints ensure the maximum size of the fund is not exceeded and drawdown is restricted when the stabilization fund is being rapidly depleted. Various scenarios have been simulated to examine different formulae specifications to facilitate more efficient and reliable stabilization measures.

In effect, the model takes into consideration all the key variables which CEMA has identified in the pricing decision, but in a more systematic and objective manner. Simulation analysis has indicated that a five-year nominal moving average of f.o.b. values is suitable for copra in the build-up phase of

funds but, once a mature fund (defined as equivalent to the annual export value of copra) has been built up, the moving average could be adjusted to real terms by applying an inflation factor. As mentioned above, a seven-year nominal moving average was found to be appropriate for cocoa.

Principles of price stabilization

In establishing an appropriate price stabilization scheme, the following key principles should be considered:

- Prices should be smoothed in relation to the medium- to long-term underlying world market trend. It is important that the threshold price should closely represent the underlying market trend. This can be effected by adopting a moving-average price strategy based on historical prices, as these are more reliable than using projections of future prices. However, if there has been a major change in the price trend, this should be reflected in the threshold price.
- The stabilization fund should be self-financing in the long term provided the moving average closely follows the underlying market trend and symmetry is maintained between the payment of bounties and collection of levies.
- As the fund is growers' money deferred and held in trust on their behalf, it is essential that a bank account separate from an operating account is established to ensure that there is no cross-product subsidization (that copra funds, for example, are not used to support cocoa prices).
- The stabilization mechanism should be based on automatic formulae. This facilitates the objective calculation of the threshold price and bounties or levies. An automatic mechanism will ensure that stabilized prices tend towards the trend and thus minimize distortions in production response.
- The scheme should be kept relatively simple so that it is easily understood and is predictable in its operation to all parties concerned.

Conclusion

At the theoretical level, the various macro and micro arguments about stabilization are still being debated with no clear-cut solution. However, it is at the pragmatic policy level that price stabilization has proven to be an effective instrument to counteract price uncertainty, and has provided for a stable planning framework. Tree crops are long-term crops which require long-term policies.

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Privatization of agricultural marketing is a major issue today in developing countries. There is concern that poor agricultural export performance over the past two decades is the result of inadequate marketing by government commodities boards.

This book examines the issues raised by the public-private debate in five south Pacific island countries. These issues include stabilization, protection of smallholders, quality control, marketing margins, economies of size, and trade facilitation.

Policy makers, officials and others involved in agricultural exporting at the national level will find this book thought-provoking. There are no easy answers – only difficult questions. Yet governments must find a way to improve agricultural export performance, the future depends on it.